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The Journal of Mental Pathology

Subscription Price:—\$2.50 per annum. Single Copies, 50 cents.

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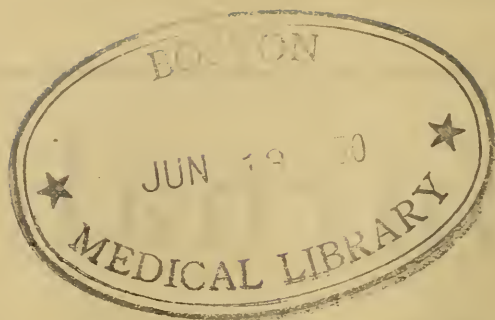
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STATE PRESS, PUBLISHERS,

NEW YORK, N. Y.

MSS. AND COMMUNICATIONS SHOULD BE ADDRESSED TO THE EDITOR,
28 WEST 126TH STREET, NEW YORK.



INDEX TO VOLUME VII.

ORIGINAL CONTRIBUTIONS

	PAGE		PAGE
Clinical observation on a rare case of "phobia," Pietro Timpano	21	cardiac and respiratory tracings, a preliminary communication, Louise G. Robinovitch	172
Cretinism in a dog, a study of its thyroid gland, Drs. Ugo Cerletti and Gaetano Perusini	209	Genesis of genius, the, Louise G. Robinovitch	228
Degenerate ear, anatomo-anthropological sketch, the, V. V. Vorobieff	57	Heredo-syphilis, form—infantile multiple sclerosis, familial sclerotiform heredo-syphilis, Sante De Sanctis and Gian Luca Lucangelli	1
Electrocution, an experimental study with an electric current of low tension. Illustrated by cardiographic and respiratory tracings, with some critical remarks on the present method of the official electrocution, a preliminary communication, Louise G. Robinovitch	75	Neurasthenia and neuro-hypers-thenia of Grocco, a critical review, Pietro Timpano.....	167
Electric sleep, an experimental study with an electric current of low tension, illustrated by		Pathology of the neurofibrils, the, Ugo Cerletti and L. Sambalino	113
		Reflex and automatic excitability, Sergio Sergi.....	161
		Remarks on a specific human energy and its economic and social significance, Louise G. Robinovitch	120

TRANSLATIONS AND ABSTRACTS OF CURRENT LITERATURE

A	PAGE		PAGE
Abolition of capital punishment in Belgium, results of the practical, Maynard Shipley..	191	Arterio-sclerosis, psychic disturbances during the course of cerebral, S. Soukhanoff and I. Vedenski.....	32
All crazy within 700 years.....	43	Attention, a disease of the, Hospital	152
Acrania, a case of hydrocephalus and, A. E. Engzelius....	106	Asexualization, Everett Flood.	35
Alcoholism and idiocy, Le Marc Hadour	52		
Allison, Henry E.....	88	B	
Alternating current of high voltage, pernicious effects of...	136	Blind, contribution to the study of the psychology of the, A. Krogluss	142
Antitoxin for mushroom poisoning, W. W. Ford.....	203	Binuclear cells, experiments made on Guinea-pigs by poisoning with phosphorus and bacilli of yellow fever (Santarelli), new data relating to the study of, K. A. Koutchouk	45
Anti-rabies vaccination in St. Petersburg, annual report of the Imperial Institute of Experimental Medicine, V. Kraiouchkine	44	Birth-rate declining steadily since 1860	99
Ants and some other insects, the psychical faculties of, A. Forel	155	Births, multiple and heredity.	204
Armies of the greatest battles in modern history, the.....	51	Brain, the correct weight of Prof. Taguchi's	180

	PAGE
Brain, the weight of Prof. Taguchi's	156
Brain weights, some results of a study of variation and correlation in, Raymond Pearl....	184
Birth-rate, decline in and mortality of infants, F. S. Krum	154
C	
Cervical portion of the spinal cord with post mortem examination, a case of injury to the, J. Howard Morgan....	37
Cerebellum, on some disputable points regarding the physiology of the, M. L. Patrizi	138
Cerebral physiology and theory of volition, Paul Flechsig...	90
Cerebral cortex of the dolphin (delphinus delphis), histological research, the, V. Bianchi	151
Cerebral cortex, psychic function and the, Sciamanna....	90
Chair of psychiatry, Rome, the	88
Chinese sympathy for the Jews.	202
Chorea, chronic progressive, contribution to its clinical and anatomopathological study, Daddi	101
Chorea with anatomic-pathologic findings, a case of Huntington's, Carlo Besta.....	101
Congress of Psychology, the V-th international	86
Congress of criminal anthropology, sixth international.....	200
Congress of medicine, fifteenth international	200
Consciousness and its degrees, Paul Sollier	91
Consciousness after hanging, persistence of	103
Consciousness and will-power, the newest conception of.....	29
Consciousness from the medico-legal point of view, the phases of	25
Cretinism, studies of endemic, U. Cerletti and G. Perusini..	97
Continuous involuntary crying.	157
Crime record for quarter ending June 30, 1904, New York City's	50
Criminal responsibility of insane Malays, the normal Malay and the, Major Charles E. Woodruff	95
Cysticercus in the aqueduct of Sylvius, a case of, Zemblinov	185
Cytodiagnosis in psychiatry, Clarence B. Farrar.....	190
D	
Deaf and blind girl, an address delivered by a.....	51

	PAGE
Death, a sure sign of, acidification of the viscera, Brissemorel and Ambard	49
Dementia precox, head trauma and, A. D'Ormea	105
Dementia precox, researches into the metabolic changes in, D'Ormea and F. Maggioto...	104
Dementia precox, general considerations of the clinical significance of, Meeus.....	199
Dementia precox, on a special form of the red blood corpuscles in, Pighini and Paoli....	106
Diabetes with consideration on the evolution of the disease, a case of bronzed.....	42
Dreams during a period of one hundred nights, study of, H. Pieron	142
Dreams, stereotyped, Meunier..	202
Deaf and dumb in Germany, statistics of the, John Koren.	157
E	
Echopraxia, psychologic and clinical study of, Dromard..	194
"Electric sleep," Louise G. Robinovitch	91
Epilepsy and dechloridization, Ch. Mirallie	193
Epilepsy, a rare case of reflex, Ouspenski	143
Epilepsy, treatment of, hyperbromidization through hypochloridization, Ch. Achard..	40
Epilepsy, pathogenesis and therapeutic indications, second part: treatment of epilepsy, Alexander Paris	38
Epilepsy in animals and man, a comparative study of idiopathic, L. Pierce Clark.....	52
Epileptic convulsive attacks and urinary elimination, J. and R. Voisin and Krantz.....	49
Execution in prisons, objection to	51
Epileptoid foot trepidation and surgical anesthesia, Lannois.	195
Epilepsy, new chemical researches into, Paul Masoin..	153
Evolution and involution of peoples, influence of geographical surroundings and heredity of acquired characters on the, A. Matteuzzi....	140
Experimental contribution to the study of so-called vital electro-magnetism, by means of the galvanometer, Ed. Gast Desfossess	92

	PAGE
F	
Fatigue of school children, how should be measured, M. C. Schuyten	156

G	
Garnier, Dr. Paul.....	89
General paralysis, at the Academy of Medicine, Paris, the question of the relation of syphilis and, Georges Vernet.	93
General paralysis, clinical and anatomopathological studies of juvenile, F. Burzio.....	157
General paralysis, a case of traumatic, Wahl	198
General paralysis, the histological basis of remissions in....	31
General paralysis and tabes dorsalis, a contribution to the study of the relation of, Henry Cotton	150
General paralysis, peculiarities of memory in progressive, Zacharchenko	201
Glucose in the cerebro-spinal fluid, absence of, Dubos....	203
Goitre, the pathological anatomy of exophthalmic, G. MacCullum	102
Goitre in the Philippine Islands, an area of endemic, Louis C. Duncan	181
Gustatory sensibility in man and woman, measuring, Vaschide.	49

H	
Hallucinations and hallucinatory psychoses, on, Angiolella	197
Hallucinations, objective signs of, Zaregradski	197
Heat and cold in circumscribed areas of the skin, limits of physiological tolerance to, Marco Treves	143
Hemi-hypertrophy in which the internal organs were also involved, a case of, Robert Hutchinson	46
Homicide, the cause of, collective	180
Hysterical contractures, contribution to the study of, A. Piazza	106
Hysterical anesthesia to fatigue, H. Pieron	142
Hysteria in children, development of, L. Babonneix.....	43

I	
Idiocy, the causes of, Kovalevski	36
Idiocy, Mongolian type of, Kovalevsky	153
Idiots savants	34
Imperial differences, the cost of	180

	PAGE
Inebriates in New York, a hospital for	203
Inebriety and the so-called cures, James Stewart.....	194
Inheritance in man, Alice Pearmain	155
Infantile cerebral hemiplegia and hemiataxia, Bouchard...	46
Indian schools, progress in the.	41
Insanity and allied neuroses, variation in relation to the origin of, John Macpherson..	188
Insane in Canada, T. J. W. Burgess	189

K	
Kills husband and daughter and commits suicide	107
Korsakoff's psychosis, report of cases, Arthur W. Hurd.....	191
Korsakoff's psychosis, two cases of, Patterson	157

L	
Laminectomy of the third and fourth lumbar vertebrae for a lesion of the cauda equina, Roberto Alessandri	203
Locomotor ataxia successfully treated with ultra-violet rays, J. Monroe Lieberman.....	187
Lumbar puncture from the diagnostic and therapeutic points of view, Gerhardt.....	39

M	
Men and women, the relative number of	196
Mental and nervous cases with special reference to the poor, some points in the early treatment of, A. Helen Boyle....	201
Mental healing, the element of truth in, Lucy Waite.....	199
Mental diseases, some considerations on the treatment of, J. Christian	186
Mental disturbances among the personnel of hospitals for the insane, inquest into the frequency of	104
Mentality of the lower animals, experimental researches into the, P. Hachet-Souplet.....	92
Mental disorders, some metabolism studies with special reference to, Otto Folin....	33
Moral insanity with repeated homicides and incendiarism and late developemnt of delusions, a case of, Henry R. Stedman..	32
Mother kills her seven children and mortally wounds herself.	202
Music, the love of.....	35
Myrmecidæ, psychological study of a species of, Henri Pieron	92

	PAGE		PAGE
N			
Nerve cells, concerning the continuity of the, and some other matters connected therewith, John Turner	192	of the pathogenesis of acromegaly, Guido Guerrini.....	144
Nervous elements of the spinal cord in the chicken, the genesis and correlation of the, E. Lapegna	156	Poliomyelitis in the adult, acute anterior, A. VanGehutchten	106
Nervous elements, on the fibrillary structure of the, M. I. Gourevich	147	Porencephalia, contribution to the study of, O. Broglio....	152
Nervous fibre in relation to its function, the fine structure of the, Carlo Besta.....	140	Princess Louise's examination..	52
Nervous cells of the vertebrate, the endocellular fibrillary network and the axis-cylinders of the various methods of elective staining of the endocellular and peripheral network based on the action of pyridin on nervous tissues, Arturo Donaggio	48	Princess Louise	88
Neurotoxic serum, by the method of rapid immunization, preparation of a, Armand Delilie	50	Progressive paralysis, anatomopathological and clinical contribution to the study of the relation of syphilis and, R. Stanziale	154
Notes of a visit to some foreign hospitals, mainly in Germany, E. N. Brush.....	150	Psychoses studied histologically, considerations regarding five cases of acute, A. Deboubais	48
Nyctophobia in children, R. Senet	155	Psychic slowing and disturbances of evocation of ideas of the melancholiac, the, Masselon	36
O		Psychology, a prospective lesson in practical.....	179
Ocular paralyses, clinical contribution to the study of, Giovanni Fabrizi	203	Psychoses, the etiologic rôle of syphilis in the, L. Marchand.	155
P		Psychic suffering of women as one of the forms of sexual psychopathia, Jakolev	149
Pain, the sense of, Mlle. J. Ioteyko	182	Psychic hemiplegia in a paranoiac, Zaregradski	157
Paramyoclonus multiplex, histopathologic researches into, E. Poggio	198	Psychological notes on the Pahouin negroes, Alice Degallier	148
Palate, comparative measurements of the hard, in normal and feeble-minded individuals, a preliminary report, Walter Channing and Clark Wissler.	151	Psychotherapy in the treatment of sexual impulses, importance of, E. Berillon.....	141
Passion, specific characteristics of, Th. Ribot.....	139	Physiological concomitance of pleasure and pain, an attempt to determine the, Mario Govi	143
Parole system suggested, extension of	51	Public schools for the year ending June 30, 1904, cost of the	51
Pellagrogenous toxic agents, experimental researches into the anatomical localization in dogs of the delirious symptom due to, Carlo Ceni.....	91	R	
Peopling the earth, believes in.	105	Race suicide, J. R. Allen.....	103
Philosophy and psychology, Adechi Babatone	92	Race suicide in France.....	199
Pituitary body, on experimental, secondary hypertrophy of the, contribution to the study		Reflex of the "extensor digitorum communis," on the, Arturo Morselli	100
		Rockefeller, John D., is a total abstainer	107
		Russian revolution, a detail in the	202
		Rhythm sense in primitive peoples, the, Charles S. Myers..	142
		S	
		Saturnine intoxication, Ch. Mirallie	40
		Schopenhauer	157
		Sciamanna, Professor Ezio....	88
		Sense disturbance following extirpation of the columns of	

	PAGE		PAGE
the spinal cord in dogs, V. Ducceschi	137	Tetanus cured by heroic doses of antitoxin, severe case of, Charles F. Davidson.....	105
Sensation and motion, Frederick C. Gessner.....	34	Thought, on latent and synchronous, Cesare Rivera....	143
Sexual inversion, a case of, Antheaume and Parrot.....	154	Thyroid gland, contribution to the study of the physiology of the, Petrovski.....	188
Sexual continence	198	Thyroid gland, dwarfism and its treatment with some forms of, Bourneville	45
Shocked by 13,500 volts and lives	179	Touche a cable carrying 22,000 volts and lives, Oldright....	192
Sibbald, Sir John.....	89	Toxin of fatigue and its antitoxin, Wiechardt	48
Sign of civilization.....	178	Time, the appreciation of, in children, Ida Faggiani.....	143
Simulation of mental and nervous diseases among children, Paul Moreau.....	104	Tabes dorsalis, the question of trophic disturbances during the course of, V. Dobrokhov	47
Sleep, on the diseases of, crimes committed during somnambulism	135	Tweed's son is said to have committed suicide	107
Sleep, problems and theories relating to, Claparede.....	146		
Social peril, a veritable, voluntary depopulation, G. Eustache	200	U	
Somnambulistic sleep, while in a, walked off car of a train that was carrying him to suspension bridge	107	Urinary elimination during the course of dechloridization, J. and R. Voisin and Krantz...	50
Status epilepticus, dechloridization, bromism and, Voisin and Rendu	202	Useful work during sleep, example of, P. Bovet.....	152
Suicide, the question of medico-psychological sketch, I. M. Reichers	147	V	
Syndrome of Brown-Sequard, wound of the spinal cord, Couteaud	204	Vambéry and his linguistic organ	156
		Vibro-sensibility, contribution to the study and interpretation of, V. Forli and B. Barrovecchio	196
T		Vision in the insane and in born delinquents, the field of distinct, E. Audenino.....	141
Tamburini, Professor, to fill the chair of psychiatry at the University of Rome.....	137	W	
Tabes dorsalis in children, M. S. Margules	193	War death roll of a century...	51
Tent treatment to additional classes of the insane, extension of, C. F. Haviland and Ch. L. Carlisle.....	191	Warning to physicians of Colorado	203

BOOK REVIEWS

	PAGE		PAGE
Aliénés criminels et des criminels aliénés, des, Marcel Verin, Thèse	56	acé by Professor G. Mingazzini, Mario Augusto Bioglio.	208
Collection of neuropathological and psychiatric works dedicated to Prof. I. A. Sikorski on the occasion of the completion of thirty-five years of his medico-scientific career, a, (1896-1904), by his students, Kushneriev, Kiev, 1904	56	Criminalité de l'enfance, thèse, Rennes, René Le Marc Hadour	56
Contributo allo studio clinico dell' emicrania (semplice e accompagnata), with a pref-		General psychology, with physiological and graphic illustrations, twenty-one colored plates and 285 illustrations, I. A. Sikorski.....	109
		Geschlecht und Kinderliebe, P. J. Moebius	55
		Grundlinien einer Psychologie der Hysterie, Willy Hellpach	111

	PAGE		PAGE
Grundriss der Heilpaedagogik, Theodor Heller	111	Studi sulla pazzia nella pro- vincia di Roma, confronti internazionali, Augusto Gian- nelli	204
Lezioni di anatomia clinica dei centri nervosi, G. Mingazzini	112	Studies in the physiology of sex. Sexual selection in man. 1, Touch. 2. Smell, 3, Hear- ing. 4, Vision. Havelock Ellis	107
Mental defectives, their his- tory, treatment and training, Martin W. Barr.....	53	Syndrome de la névrose ascen- dante (névrite ascendante régionale). Clinique et ex- perimentation, le, J. A. Si- card	207
Mental diseases. Vol. I, Gen- eral psychopathology. Vol. II, Special Psychiatry. A textbook for physicians and jurists, P. I. Kovalevski, 5th édition	112	Trattato di psichiatria ad uso dei medici e degli studenti, Leonardo Bianchi	52
Moralischen Schwachsinn des Weibes, ueber den, Katinka von Rosen	55	Tuberculosis as a disease of the masses, and how to combat it, S. A. Knopf.....	56
Psychologie des romanciers russes du XIX-me siècle, Ossip-Lourie	158	Variazione dei sulchi cerebrali e la loro origine segmentale nell' hylobates, Sergio Sergi.	56
Rôle du sel en thérapeutique, le, Ch. Achard.....	54	Youth of Washington told in the form of an autobiog- raphy, the, S. Weir Mitchell.	55
Semeiotics and diagnosis of mental diseases, their treat- ment and handling, Serge Soukhanoff	160		
Simulacion en la lucha por la vida, la, José Ingegnieros...	112		

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ILLUSTRATIONS

Respiratory curves and cardio-
gram during electrocution with an
electric current of low tension.
Mode of resuscitation.

Neurofibrils. Serial sections il-
lustrating the pathology of the neu-
rofibrils.

Cardiograms and respiratory

curves during sleep induced with
an electric current of low ten-
sion.

Serial sections illustrating the
anatomy-pathology of the thyroid
gland in a cretin dog.

Myograms illustrating reflex and
automatic excitability.

THE JOURNAL OF MENTAL PATHOLOGY.

VOL. VII.

1905.

No. 1.

HEREDO-SYPHILIS. FORM—INFANTILE MULTIPLE SCLEROSIS.

(Familial Sclerotiform Heredo-Syphilis.)

(*From the Laboratory, School for Backward Children,
Rome, Italy.*)

BY PROF. SANTE DE SANCTIS AND DR. GIAN LUCA LUCANGELI.

By the term multiple cerebro-spinal sclerosis, focal sclerosis or *sclérose en plaques* is designated a special morbid entity characterized by special sclerotic processes of the central nervous system. Charcot described the symptomatology of the disease and pointed out that it appeared either in a typical or in an abortive form. Among the most important symptoms described by him are intentional tremors, staggering gait, spastic paresis of the limbs, contractures, exaggeration of the deep reflexes, scanning speech, nystagmus, transitory emblyopia, papillary atrophy, mental enfeeblement, epileptiform and apoplectiform attacks.

This disease is not very common, not even in adults, forming about 4% of all the nervous cases handled in clinics and dispensaries. The percentage of these cases was discussed at a meeting of the *New-York Neurological Society*, held February 4, 1902, and the results are shown in the table on the following page.

Authors.	Number of cases.		%
	Nervous diseases.	Multiple sclerosis.	
Dana, private clinic.....	3000	10	0.33
“ clinical histories	600	2 (*)	0.33
Hammond, private clinic.....	3000	15	0.50
“ clinical histories	7000	32	0.50
Allen Starr	10056	27 (*)	0.27
Sachs	2000	13	0.65
Fisher, in six years.....	2451	10 (*)	0.41
Collins, 1890-1897	4000	28	0.70
“ 1898.....	1270	3	0.24
“ 1899.....	1400	5	0.36
“ 1900.....	1368	5	0.36
“ 1901.....	1470	5	0.34
Total.....	37615	155	0.40%

According to Spiller, multiple sclerosis is more common in Europe than in the United States, and according to Sorgente,—more common among men than among women. Moncorvo, on the contrary, considers the disease more common among women.

Among children the disease is so rare of occurrence that some authors even question its existence at that age. In children, according to Westphall, the question is simply that of pseudo-sclerosis ending in recovery, and when autopsies are obtained no lesions are found. According to P. Marie, multiple sclerosis never affects children, and the reported cases in children are always those of hysteria or cerebral sclerosis. The youngest case,—that reported by Pollak, was that of a child five months old. According to Grasset, it is rare to find a case of multiple sclerosis in children under seven years of age. According to Leiden and Goldscheider, the disease is most frequently met with after thirty years of age, and generally speaking between 18 and 35 years of age. The first case of a child was reported by Schuele, in 1871; other cases were then reported by Deschfeld, Bristowe, Ten Cate, Hoedemaker, and others. Until 1878, however, cases of infantile multiple sclerosis were still rare in literature (Erb). According to P. Marie, there were only 13 infantile cases reported up to 1883. The latter author doubted the authenticity of some of those diagnoses, so that in 1886, Grasset claimed that only a few of the juvenile cases could be accepted as such. According to Unger, there were 19 infantile cases reported up to 1887, and in 1889, they numbered 39. Stieglitz reduced that number to 35.

(*) Some of which are dubious.

In 1892, Mensi collected 26 cases in all (19 reported by Unger and 7 by Nolda).

In 1900, D'Espine and Picot claimed that there were only some thirty positive cases, and in the review of the 37 cases by Sorgente, only 3 are accompanied by post-mortem documentation (the cases of Eichhorst, Zenker and Schuele). In 1902, there were, according to Schupfer, 58 cases, of which only 26 were positive ones. To-day there are some 59 cases. The rarity of the disease is admitted by all neurologists. Jelliffe, for instance, found 9 among 109 nervous cases, and Bourneville, during a period of 20 years, found 4 cases at Bicêtre.

From what has been said above it is seen that infantile multiple sclerosis is a rare disease, and that many of the cases reported in literature are dubious as to their being those of infantile multiple sclerosis. Struempell, Sachs and others say that in children the diagnosis of multiple sclerosis is doubtful if not verified by an autopsy.

We should finally ask ourselves whether there is a familial form of multiple sclerosis during infancy. There is not only a hereditary (Eichhorst, Klausner) but also a familial form. Some such cases have been published (Frerichs, Carini, Abrahamson, Moncorvo, Friedmann, Deschfeld, Cestan and Guillaîne, Pelizaeus, Reynolds, Massalongo, Friedreich, Erb and Tótzke) but they are not *quite positive*. So much so that Abrahamson remarks in his case that its being familial speaks against the diagnosis of multiple sclerosis. Even if one does not admit the above assertion as being quite exact, it remains certain, nevertheless, that such familial forms that have been published under the name of multiple sclerosis lack not only in anatomic-pathologic (*) but also in ophthalmoscopic findings. The latter findings, as we shall see below, are of considerable importance. We insist on this point because familial cases that presented even a typical symptom-complex of multiple sclerosis were proven by the course of the disease and the autopsies to have quite different lesions.

Schupfer, who seeks to give the clinical signs of true infantile multiple sclerosis (a useful endeavor if there existed truly pathognomonic signs) says himself, with various other authors, that many other nervous affections run their course, presenting the clinical symptoms of multiple sclerosis. This fact should particularly be borne in mind when dealing with familial forms. Thus, one is apt to be led astray in cases of Friedreich's ataxia,

* It seems to us inconvenient to have to wait for the autopsy in order to make a clinical diagnosis.

Westphall's pseudo-sclerosis, essential hereditary tremor, cerebellar ataxia (Marie's type), cerebellar atrophy with degeneration of the pyramidal tracts (Popoff, Bourneville and Crouzon), hystero-organic associations (Raymond), spastic paraplegia and diplegia (Pelizaeus, Freud, Sutherland), lobar cerebral sclerosis (P. Marie), myelitis with secondary degeneration (Sorgente), spastic tabes of Erb and Charcot (Araoz-Alfaro), Little's disease (Naef, Pineles). Freud and Marie advise to reject the diagnosis of multiple sclerosis even if there is *only one symptom* of Little's syndrome present. Schupfer, however, considers the above restriction excessive, and the symptoms are so classed that multiple sclerosis and cerebral spastic diplegia may be differentiated respectively. Even arrest of development of the cerebral nervous system (Pesker, Pelizaeus, Sachs—agenesis corticalis) and cerebral tumors may simulate multiple sclerosis (Westphall); finally, some forms of poisoning,—hysteria (Terrien, Charcot, Raymond, Sabrazès and Cabanès), malaria (Torti and Angeli), chicken-pox and whooping-cough (Variot, Barthez and Sanne).

Thus, we should admit that more than one true morbid entity that can be brought under the term of multiple sclerosis may often have to be differentiated from *sclerotiform syndromes* that may be due to many and various morbid processes. Among those, it seems to us, *hereditary cerebro-spinal syphilis* merits particular attention. In 1886, Fournier first claimed that hereditary cerebral syphilis had no special symptomatology characteristic of itself and that all phenomena with which it presents itself were characteristic of many common forms of encephalopathy and even of all possible forms of encephalopathy of whatever nature. Besides, in his work on hereditary syphilis, he devoted a whole chapter to the consideration of multiple sclerosis, remarking that theoretically he had long since considered this disease as an affection in which syphilis should some day be given a most prominent part as a cause. He further added that while it had been difficult for him to demonstrate that view clinically and anatomically, Moncorvo had demonstrated its validity. In 1884, the latter author claimed that hereditary syphilis was the cause of multiple sclerosis in some instances. He supported his conclusion by a complete and masterful study of three cases, showing that multiple sclerosis had, without any doubt, been developed during childhood (between 7 months and 10 years of age), the children being decidedly affected with hereditary syphilis. The pathogenesis is confirmed both by clinical findings and the undeniably favorable effects produced by specific treatment. It is

evident that these authors did not make any distinction between *true* sclerosis and the sclerotiform diseases, thus admitting a form of *multiple sclerosis of heredo-syphilitic nature*.

The autopsies reported by Cruveilhier, Daniel, Mollier, Virchow, F. Dreyfus and others, demonstrate that the brain can be directly affected by hereditary syphilis. In those cases were found acute and chronic meningitis and cerebral lesions developed under the influence of these causes. In 1893, Foà, in Italy, published an autopsy performed on a child, whose clinical history had not been known. He found sclerosis and aplasia of the cerebral convolutions that were hard and whitish; there were also disseminated sclerosis foci in the corpus striatum, optic thalamus and medulla. Besides, gelatinous gommata were found in the heart and the cortical substance of the kidneys; there was no trace of lesion in the bladder. Forms of familial spastic paralysis due to hereditary syphilis have been described by Filatow, Jacobson and Homén.

According to Leyden and Goldscheider, multiple sclerosis is characterized by scanning, nystagmus and tremors, as distinguished from hereditary syphilis that is characterized by pareses of the cranial nerves, hemiplegia and dementia, adding, however, that the differential diagnosis is very difficult to make. Redlich and Hoffmann are of similar opinion, saying that the only possible diagnosis is that based on anatomic findings. According to Sachs, Oppenheim, Soltas, Cassirer and others, syphilis in the adult may bring about disseminated sclerosis. Something similar is also found in heredo-syphilitic children. The symptomatic similarity as above does not authorize to state, however, that the anatomic lesions are similar to those found in multiple sclerosis. Here, as well as in the familial forms of Moncorvo, one can speak only of syphilitic disseminated sclerosis, while the anatomic findings differ from those of true multiple sclerosis (Schupfer). Schupfer ascribes little importance to heredity in multiple sclerosis, indicating as characteristics of multiple sclerosis with heredo-syphilis—vesicular disturbances and those of general sensibility, the progressive course (although periods of temporary improvement are possible) and a duration of many years' standing. We think, however, that the distinctive traits between true multiple sclerosis and multiple sclerosis or sclerotiform diseases due to heredo-syphilis are the course of the disease and the ocular disturbances.

The course of true multiple sclerosis, as we have already mentioned, is progressive, and the prognosis is always bad (Charcot, Struempell, Schupfer, Freud). In the heredo syphilitic forms,

on the contrary, especially in cases subjected to energetic specific treatment, the course is regressive and the prognosis is quite favorable: marked improvement may be obtained (our cases) and quite often complete cure is possible (Moncorvo, Mensi, Sorgente). Of the *ocular disturbances*—the characteristic trait of true multiple sclerosis—*optic neuritis with white papillary atrophy is noted*. This condition is readily seen with the ophthalmoscope: the pale or white papilla is like porcelain, with well defined margins and bowl-shaped excavations, atrophy of the nervous fibrils, leaving bare the lamina cribiforma, and the vessels, reduced in volume, are filiform. The ocular lesions in heredo-syphilis are quite different: even if the various forms of gommatus or diffuse neuritis of the III-d, IV-th and VI-th pairs of cranial nerves, and their respective manifestations (Esmarch, Jossen, Lancereau, Virchow, Wagner, Westphall, Heubner, Rumpf) are absent, and even when the different forms of interstitial keratitis are absent (Hutchinson) (*) the differential diagnosis can be made on the basis of the ophthalmoscopic findings: sometimes the eye-ground is found normal, but most frequently the characteristic *specific choroido-retinitis* is found either in its early or mature stage. This is accompanied by Foerster's yellow atrophy and the well familiar reddish nodules due to the choroiditis. These nodules are paler as the part considered is farther from the centre, finally ending in a fringe of black pigment. Optic neuritis of multiple sclerosis has been well described by Parinaud, Uthoff, Gunther, Nagel, Lubbers, Zunn, Schwarz, Eichhorst, Charcot, Oppenheim, Acquaderni (Dr. Nigrisoli's report), Sorgente (Prof. Fortunati's report, Rome). Bruns and Stoeling have found atrophy in 30% of the cases of multiple sclerosis, Sachs found complete atrophy in 3% and incomplete in 5% of his cases. He adds that atrophy of the temporal half of the papillæ is almost pathognomonic. Schupfer also attaches much importance to this atrophy, and justly so. Generally speaking not all authors who have come across this variety of atrophy have attached to it as much importance as it merits, according to us. Besides, many authors have omitted the ophthalmoscopic examinations in their papers. According to us, the optic neuritis is a sign of the utmost value in true multiple sclerosis. Besides, when the disease is of a progressive course, the

* The frequency of the ocular forms in heredo-syphilis can be seen from Fournier's statistics that follow:

1. Ocular affections	101 cases.
2. Osseous affections	82 cases.
3. Cutaneous affections	53 cases.
4. Pharyngeal affections	46 cases.
5. Cerebral symptoms	42 cases.

above sign is the only one that enables to differentiate between true multiple sclerosis and the sclerotiform affections, especially those of heredo-syphilitic nature.

The cases of three members of the same family, two brothers and one sister, cited below demonstrate our statements.

Family B. The father is healthy, greatly addicted to the use of alcoholic drinks. According to various physicians who have had him under their care, he contracted syphilis and had had syphilitic eruptions before he was married. He denies, however, having had syphilis. The mother is of robust health but of low intelligence. The first child, a boy was born after a difficult confinement. He died, 13 days of age, of "paralysis" (?). The family physician said that the child died of syphilis inherited from the father. Two abortions followed the first childbirth, and then our three patients, R-do, A-do and F-ta were born; the last child, A-se, is healthy. It seems evident that the health of the descendants of this family improved as time went on. As we have stated:

The first child died, 13 days of age.

The second conception ended in abortion.

The third conception ended in abortion.

The fourth child, R-do, is ill.

The fifth child, A-do, is ill.

The sixth child, F-ta, is ill.

The seventh child, A-se, is healthy.

Case I.—R-do, 10 years of age (1904). He was born at full term, the delivery being normal. He was in good condition and well fed until he was 5 months old. At that period he began to hold his head inclined and to squint (*strabismus*). He also began to lose flesh, improving or getting worse at different times. He began to walk when three years of age, making little progress in walking until he was 4 years of age. He has had measles, then typhoid fever. The first four teeth were regular, but soon decayed and fell out. He first said "mamma" when three years old. The parents state that R's physical and mental development was slow and irregular. Besides, he has always had a bad temper, was rebellious and unmanageable. He was repeatedly refused admittance to school and was finally placed in the *Asilo-Scuola*, October 5, 1899.

OBJECTIVE EXAMINATION, JUNE 1, 1900.—The patient is 6 years of age. Weight, 15.500 kilogs, height, 96.5 cts., maximum extension of the arms, 93 cts. The head is ovoidal, slightly asymmetric, voluminous, of rachitic type, the maximum longitudinal diameter being 175 mm. and the maximum transverse

diameter, 132 mm. The forehead is narrow, protruding, showing marked furrows. The eye-balls are deep-set, the nose somewhat flat at the root, short and thick, the lower jaw heavy and some teeth have fallen out decayed.

NUTRITION.—The patient is voracious, his sleep is profound, disturbed by nightmares. He is well nourished, however, and the thyroid body is only slightly developed.

MOTILITY AND SENSIBILITY.—The head is generally somewhat inclined towards the right shoulder. Both during repose and motion there is slight facial asymmetry due to insufficiency of the left facial nerve. The superficial reflexes are not marked, the patellar reflexes are difficult to obtain because the lower limbs are insufficiently relaxed. When obtained, however, this reflex is marked and rapid. The plantar reflex is torpid. Babinsky's sign is absent. Muscular tonicity is augmented in the lower limbs. In the oculo-motor sphere is noticed now incomplete abduction, now convergent *strabismus* and *nystagmus*. A few years ago, R. was left-handed, acting as if the right hand had been too weak. At present, the muscular force is poor in both hands. Slight oscillatory *tremor* in the hands when extended and intentional tremors in both hands. Spontaneous active movements are accomplished slowly and often with marked difficulty. Gait uncertain, steps unequal or hesitating. *Scanning speech*. It is difficult to determine the condition of sight on account of the patient's impaired attention. Hypermetropic refraction in both eyes. The patient cannot tell in words one color from another. Eye-ground normal (Prof. Fortunati examined the eyes). The patient cannot differentiate the four principal tastes, designating them all as "agreeable." He distinguishes agreeable from disagreeable tastes, but cannot express the distinction in words. Tactile sensibility is unimpaired in the entire body. Repeated tests with Weber's esthesiometer show that localization of tactile sensibility is also quite normal. Sensibility of pain is rather obtuse: feeble reaction to pricking of the hands and face, more marked reaction in the calves of the legs. Sense of position (muscular sense) exists in the limbs, but not in the fingers. Visceral and cenesthetic sensations feeble.

PSYCHIC CONDITION.—Retarded and torpid attention. Accentuated mobility of attention. Memory feebly developed. No capacity for arithmetical figuring. The patient becomes readily angry, does not like companions and is selfish. He prefers to be by himself, talk to himself and be lazy rather than play with companions. He has no sense of order, is taciturn and apathetic.

Clinical notes, 1900, and winter of 1901.—The physical and

pedagogic treatment are giving favorable results. The patient's general health, character and speech are improved. Chronic rhinitis improved under iodide and iron treatment. January 30, 1901, it was noted that there was marked improvement in speech. The patient's aunt had noticed herself that the patient was now more observant and alert than formerly. He made progress in reading, writing, arithmetic and speech, but none in manual training, as the motor power of the hands remained impaired.

1901-1902.—R. has had to be away from the *Asilo-Scuola* on account of disease, nevertheless, some improvement is noticed in his speech and muscular force of the hands. The figures below show the record with Collin's dynamometer, small model.

Right hand, 6, 6, 4, 3, 4. Average, 4.6 kilogs.

Left hand, 4, 2, 3, 2, 3. Average, 2.8 kilogs.

During the dynamometric measurements the patient's cheeks become colored, at times he bites the lower lip and there are tremors of the angles of the mouth, chin, eye-lids, brows and even of the whole body. With Sandow's dumb-bells (modified by De Sanctis), the patient makes 11 exercises with the right hand, 3 of which are incomplete, and 5 with the left hand,—all incomplete. Mathieu's pneumo-dynamometer registers 155. Regardless of all the progress, R. remains rather torpid intellectually, showing a marked disposition to indolence. Tonic treatment is continued.

1903.—Improvement in speech and movements. Attention and conduct also show progress. The patient is not refractory to moral education. He is classed as *hypomoral-hypoesthetic*.

Electric treatment has been tried (32 sittings with a galvanic current), but the result was negative. Better results are obtained from medical gymnastics. The patient can now perform quite correctly the usual exercises. Flexion and extension of the arms are readily performed. Flexion of the chest is well done forward and laterally, but the patient loses his equilibrium when flexing backward. Gait is regular, but in the exercises the lower limbs act with less certainty than do the upper ones. The chest and head always remain inclined forward. In turning or jumping off a bench, R. loses his equilibrium and falls. December 12, 1903, the dynamometric measurements were as follows:

Right hand, 6, 7, 4, 4, 5. Average, 5.2 kilogs.

Left hand, 6, 4, 5, 3, 4. Average, 4.4 kilogs.

Among the noticeable symptoms are scanning speech, nystagmus, alternate strabismus and intentional tremors. Psychically, there is *intellectual* and *affective torpor*.

Summer, 1904.—The physical development goes on with certain irregularity, as is seen from the figures below:

Date.	Weight. Kilogs.	Height. Cmts.
October 7, 1899.....	15.500	96.5
December 12, 1902.....	24.700	121.5
September 17, 1903.....	28.600	122.5
February 17, 1904.....	29.300	124.5
April 8, 1904.....	28.600	124.7
June 15, 1904.....	27.500	125.0
August 17, 1904.....	27.800	125.0
October 31, 1904.....	28.600	126.0

Even the dynamometric measurements show curious irregularities. For instance, February 17, 1904, right hand 5.8 kilogs, left hand 5.2 kilogs; while June 17, 1904, average for left hand 4.8, for right hand 4.2.

This year the progress has been noticeable. The patient can read and write according to requirements in his grade and can make simple arithmetical additions, such as 2 plus 2, 3 plus 3, etc., up to 100; he can also make similar simple subtractions.

Objective examination September 2, 1904.—R. looks well, but has marked swelling of the left sub-maxillary glands. The head is always inclined, as if the muscles of the neck were too weak to sustain it. The superficial reflexes are accentuated, while the deep reflexes are difficult to obtain and are perhaps impaired. At times there is a slight degree of Babinsky's sign, but with foot-clonus. The pupils react well to light and accommodation. The vascular reflexes are normal. Slight paresis of the left facial nerve: the left naso-labial fold is less marked than the right one. The orbicularis muscle is also insufficient. Alternate strabismus, slight rotary nystagmus. Prof. Puccioni's ophthalmoscopic examination showed nothing of note in either eye, except marked pigmentation of the choroid in the external half. Rotary nystagmus of both eye-balls, especially when a strong light is thrown on them. Oscillatory tremors of the hands when extended and intentional tremors. Slight hypertonia in the lower limbs. Absence of Romberg's signs. When made to walk on a straight line traced on the ground, the patient loses easily his equilibrium. There is always marked scanning in speech. Attention is torpid, but not very shifting. Memory is poor. Ability for arithmetical figuring is quite satisfactory. Emotion in general is little marked. With all the progress in his condition, the patient remains *backward* in his mental and physical development.

DIAGNOSIS.—Heredito-syphilis, form: multiple sclerosis (familial sclerotiform heredito-syphilis).

Case II.—A—do, eight years of age (1904). Born at full term, normal labor, nursed by his mother. According to the latter, "his tongue protruded from his mouth" until he was eighteen months of age, and he was unable to hold himself straight until he was two and a half years of age; even when seated, his body was doubled up and his head inclined to the shoulder. Strabismus was first noticed when he was five months old. He has had whooping-cough and then bronchitis and pneumonia. He began to walk late: when three years of age he dragged himself on "all four, as if his legs had been too weak to hold him." Even later, he never walked well. When three years of age, he had pneumonia for the second time and measles. At that age he could hardly say the simplest words. Even now he speaks with difficulty, like his brother, R—do (bradylalia). Dentition was regular. Towards six years of age he had neuroparalytic ulcerative *keratitis* in both eyes, caused by syphilitic lesions of the intracranial part of the trigeminus (diagnosis by Professor Collica, who had treated the patient). The keratitis left leucomas in both eyes. Intelligence was torpid. The patient has attended a private school for the last two years, and we examined him in the dispensary of the *Asilo-Scuola*.

OBJECTIVE EXAMINATION, September 5, 1904.—Weight, 18.00 kilogs; height, 113.5 cms.; maximum extension of the arms, 110.5 cms.; cranial circumference, 510 mm.; maximum longitudinal diameter, 189 mm.; maximum transverse diameter, 135 mm. Cranial shape ovoidal with marked parieto-occipital sphere. The ears are slightly ansated, forehead narrow and protruding, nose somewhat flat at the root, short and thick. The jaw is moderately prognathous.

General nutrition deficient. Voraciousness. The organs of vegetative life normal. Sleep good. The patient dreams little and does not remember his dreams.

THE MOTOR SPHERE.—General torpor and marked difficulty in spontaneous movements. Facial mimicry very feeble. Superficial reflexes normal. At times Babinsky's sign is obtained. Deep reflexes obtained with difficulty and are feeble. Pharyngeal reflexes normal. Pupillary reflexes difficult to obtain on account of the leucomas. Resistance to passive movements marked, especially in the lower limbs. Lateral and rotary nystagmus. Permanent divergent strabismus. As has been remarked, this had existed before the onset of the ulcerative keratitis. Insufficient abduction of the left eye. Marked insufficiency of the right facial nerve. The patient is left-handed, and movements with the right hand are performed with some difficulty. Gait *ataxispastic*.

Marked oscillations of the body when in the *Romberg* position. Loses his equilibrium when made to walk on a straight line traced on the ground. Oscillatory tremors in the hands when extended and slight intentional tremors. Slight athetoid movements of the right hand. Dynamometric measurements (Collin's small model) as follows:

Right hand, 4, 2, 3, 2, 3. Average, 2.8 kilogs.

Left hand, 4, 5, 4, 3, 3. Average, 3.8 kilogs.

The right hand is particularly weak.

A—do speaks slowly, pronouncing words syllable by syllable, and scanning in speech is marked.

The leucomas are not central in either eye, but almost so. *Visus* $\frac{1}{4}$. Cannot distinguish by words one color from another. Professor Puccioni's examination: in both eyes—diffuse, interstitial (parenchymatous) keratitis of syphilitic origin prevents making an ophthalmoscopic examination. Mydriasis of both pupils. They do not react to light, as they are under the influence of atropine. The patient does not distinguish the four principal tastes, all being "agreeable" to him. Gustatory, cutaneous, visceral and cenesthetic sensations impaired.

PSYCHIC SPHERE.—Attention is readily attracted, but concentration is wanting. Curiosity is marked. Memory and capacity for arithmetical figuring poor. Poor emotiveness in general. Tendency to be by himself; torpid, apathetic, but of good conduct.

Within the last few years the child has been improving spontaneously, without any treatment.

DIAGNOSIS.—Heredo-syphilis, variety: multiple sclerosis (familial sclerotiform heredo-syphilis).

Case III.—F—ta, six years of age (1904). The child was born at full term, after a normal labor. She was nursed by a wet-nurse. Has never had any convulsions. Began to walk when five years of age. Marked delay in learning to speak. Dentition regular. First showed muscular enfeeblement between four and five months of age. Difficulty in holding her head in desired positions or in moving her eyes (strabismus), exactly as was the case with her brothers, R—do and F—do. Had measles when two years of age and typhoid fever when three years of age, at the same time when her brother, R—do, was ill with it. After that she was in comparatively good health. She has had bilateral otitis with purulent discharges. She has always been a good child, but torpid intellectually. She can say only a few simple words. She has been attending a private school for the last two years, but has not learned anything. Admitted to the *Asilo-Scuola* April 12, 1904.

OBJECTIVE EXAMINATION, May 30, 1904.—Weight, 17,200 kilogs; height, 103.0 cts. Cranial circumference, 460 mm.; maximum longitudinal diameter, 156 mm.; maximum transverse diameter, 136 mm. Shape of head hydrocephalic, forehead protruding, jaw markedly prognathous. Hutchinson's teeth. Thyroid body only slightly developed.

General nutrition good. General coloring pale. Enlarged glands in the cervical region.

MOTOR SPHERE.—The head is inclined towards the left shoulder. Frequent deviation of the eye-balls. Slight hypertonia in the lower limbs. Preferably left-handed. Lateral and rotary *nystagmus*. Marked intentional tremors. Patellar reflexes difficult to obtain. Right plantar reflexes seem good. Babinsky's sign not obtained on the left side after several tests, but frequently obtained on the right side. Impossible to obtain dynamometric measurements because the child's hands are small and she cannot squeeze the instrument. Besides, she cannot fix her attention on the experiment. Alternate strabismus. Ataxi-spastic gait. It may be said that the child's speech is entirely undeveloped. Sensibility is normal. Vision (examination by Professor Fortunati, October 29, 1904): equal myopic refraction of both eyes; impossible to obtain the visual acuteness. Abnormal form of *strabismus* with external and upward deviation of the right eye. There is no secondary deviation, however, the left eye tending to slight rotary movement downward. Ophthalmoscopic examination: papillæ do not present any traces of staphyloma; on the left side, however, there are some slight cicatrices of the choroid, dating since intra-uterine life and being probably of syphilitic nature.

Psychic function undeveloped, the child being in a condition of singular torpor, although she cannot reasonably be classed as an idiot.

Summer, 1904.—Her physical condition is such that it interferes with her receiving any training. It is still impossible to obtain her dynamometric registration.

Autumn, 1904.—Muscular system little developed. Superficial reflexes normal, pharyngeal reflexes exaggerated, pupillary reflexes normal, patellar reflexes difficult to obtain. Insufficiency of the external recti muscles of the eyes, slight lateral and rotary *nystagmus*. Insufficiency of the left orbicular and palpebral muscles. The head is inclined towards the left shoulder. Slight hypertonia of the lower limbs. Motility of the hands not yet developed. Impossible to study the specific sensibility on account of the child's mental condition and her inability to speak. *Ataxi-spastic gait*. *Romberg's sign*.

PSYCHIC SPHERE.—Attention is provoked readily, but concentration is wanting. Curiosity marked. Little emotiveness. Prefers to be by herself. Sense of cleanliness and order relatively well developed. Facial mimicry poor. She has been trained to say some words (mam-ma, pa-pa), but scanning and bradylalia are very marked.

She is taking iodide treatment and is being trained. No doubt she will improve in a few months.

DIGANOSIS.—Heredo-syphilis, form: multiple sclerosis (familial sclerotiform heredo-syphilis).

SUMMARY OF THE THREE CASES ABOVE DESCRIBED.

The symptoms common to all the three cases are as follows:
Slight insufficiency of the facial nerve.

For the present, the deep reflexes are weak and difficult to obtain.

Torpid motility and hypertonia of the lower limbs.

Strabismus and nystagmus.

Intentional tremors.

Defective gait.

Scanning speech and bradylalia.

Arrest of development of speech.

Insufficient mental development.

DIFFERENTIAL SYMPTOMS.

R—do.	A—do.	F—ta.
In 1900, patellar reflexes quick and marked.	Patellar reflexes always difficult to obtain and feeble.	
Plantar reflexes very torpid.	Plantar reflexes normal.	
Absence of Babinsky's sign.	At times Babinsky's sign.	Babinsky's sign frequent on the right side.
Sometimes convergent strabismus.	Permanent divergent strabismus.	Alternate strabismus.
Slight oscillatory and intentional tremors.	Evident oscillatory tremors, slight intentional tremors.	Marked intentional tremors.
Gait—irregularity of steps, at times vasculating.	Gait slightly ataxispastic.	Gait markedly ataxispastic.
Absence of Romberg's sign.	Noticeable oscillations in Romberg's position.	Romberg's sign.

In the cases considered above classic multiple sclerosis is quite well simulated. It is easy to understand how different authors would ascribe multiple sclerosis to syphilis, on the one hand, and on the other hand claim the differential diagnosis between multiple sclerosis and cerebro-spinal syphilis to be sometimes impossible. When the symptomatology is carefully examined, however, the difference is evident. According to us, it is not reasonable to say that the differential traits of true multiple sclerosis should be based on the anatomo-pathologic changes: it is not necessary to wait for the autopsy in order to make the diagnosis. What, indeed, is one to do as regards the diagnosis when the patient improves instead of dying? We should strive to ferret out the *clinical characteristics* that differentiate true multiple sclerosis from the sclerotiform diseases.

Our conclusions are:

1. The nosographic entity of familial infantile multiple sclerosis lacks in certainty because the clinical examination in the cases published is insufficient.
2. It is necessary to differentiate between multiple sclerosis and the sclerotiform diseases of the nervous system.
3. It may be asserted that there exists a sclerotic form of cerebro-spinal heredo-syphilis and that this form is of frequent occurrence during infancy. According to us, this form should never be confounded with *true* multiple sclerosis,—on the basis that heredo-syphilis may be the cause of this disease.
4. Differential symptoms are always found when looked for. According to us, the *course of the disease and the ophthalmoscopic findings* are of the utmost importance.
5. A case of infantile multiple sclerosis, of the familial type, lacking an accurate ocular examination and that has not been under observation for a sufficiently long period of time should not be accepted as being of statistical value.

Rome, Italy, December 26, 1904.

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CLINICAL OBSERVATION ON A RARE CASE OF "PHOBIA."

BY DR. PIETRO TIMPANO.

Medical literature is certainly not poor in cases of "phobias", but the study of their origin, development and clinical varieties still remains interesting. I have had occasion to study a unique and interesting case of "phobia" that I relate in this paper.

M. M. is 33 years of age, married and has children. Her father died of heart disease at the age of 60 years. Her mother is living and healthy. Five brothers and sisters are living, healthy, and have never had any disease worthy of note. Three brothers and sisters died during infancy from artificial feeding. The mother of the patient, while pregnant with the latter, had not had any infections or other disease, and the confinement was normal. There were no traumatisms, infections or unusual emotions during this pregnancy. There is no morbid heredity either in the ascending, descending or collateral branches of the family.

During childhood, the patient had measles. She was normal in every respect as a child and young girl. She was good natured, intelligent and interested in her studies and household duties. She married when 19 years of age. Eight months later she had an attack of acute gastro-enteritis but soon recovered from it. After her first confinement she again had an attack of gastro-enteritis that was probably of infectious nature. She soon recovered from this second attack also. During her convalescence from this attack she tried to pass the time by reading the life of St. Louis. After a few minutes' reading of this book, however, she felt faint and had several spells of vomiting. The patient had been very careful with her diet, but after this spell she had another attack of gastro-enteritis. She blamed herself for having exerted herself in reading, considered the latter as the cause of her present illness, and thereafter abstained from reading any more books. Within the course of a week she recovered from this new spell of gastric disturbance and resumed her household duties. Two months later, one of the pa-

tient's friends insisted on her reading "Quo Vadis?" The patient tried to read the book, but a strange feeling of aversion possessed her. She made every effort to get over this strange and unwarranted feeling, but it was in vain. Every time she looked at the printed pages she experienced a sensation of oppression and malaise. This peculiarity was not limited to printed matter, however; she also found it irksome to read letters that came through the mails. This aversion was not accompanied by cephalalgia, weakness, vertigo or vomiting. The patient suffered from this peculiarity for 13 years before she came to my notice. When explaining to me her actual condition, she said: "Whenever I make an attempt to read anything I am overcome by a fear that vomiting should set in and make me ill; even in church I abstain from reading during service and it makes me feel ill to see others read".

Objective examination.—She did not complain of any other disturbance. The conformation of her skeleton was normal, the muscular system and adipose tissues normal, and the color of the skin normal. She was of normal height, well formed and the general nutrition was good. The face and cranium were normal in aspect and measurements. The neurological examination showed: slight tremors of the fingers when the hands were extended, the muscular force was normal, the reflexes normal, the visual field normal on both sides, and motility was normal. Tactile, thermic and dolorific sensibilities were normal. The specific sensibility was also normal. Aside from the disturbance examined here, the psychic examination was negative. Consciousness was clear, attention ready and responsive, perception was normal, there were no illusions or hallucinations, and memory was normal. The patient was of a gay disposition, altruistic and her religious sentiments were marked. She was rather emotional. Her will-power was well preserved. She did not present any abnormal impulses or perversions of the instincts.

So far as I know, there are no similar cases reported in medical literature. The only case that resembles mine is that described by Battistelli. His case is as follows below.

X. X., a civil engineer, 52 years of age, married and having children, is a descendent of a distinguished family. The hereditary history is negative, both in the direct and indirect line. The patient had typhoid fever when 16 years of age, and his nervous system had suffered from this affection: during convalescence he had had several epileptiform attacks. After the full establishment of convalescence, however, the attacks completely disappeared and never returned again. He graduated

from a University, taking his degree in the scientific department, and then entered the business world, where, in the course of a few years, he accumulated half a million lire. He then entered in partnership with a firm in which he had to be bonded. He gave his entire fortune as bond. In the course of time, the head of the firm informed him that the business was ruined and that the patient's entire fortune had been lost in various transactions. This partner then made his escape to America. The sudden shock of the misfortune and the escape of his partner had shattered the patient's nervous system. Every day's mail brought him an enormous number of letters from creditors, and the patient gave his personal attention to all of them. The nervous strain was intense, but he kept on reading his letters until one morning he suddenly felt that he could not read his correspondence: a deep sense of aversion prevented him from reading his letters. He struggled with himself against this sudden change in himself, but for several days the letters accumulated without being read by him. His wife finally asked him about the matter. He explained that the shocking notes he was receiving from the various business houses had completely broken him down and that an awful aversion against reading any of those letters prevented him from opening and reading them. He then begged his wife to open and read them for him. This fear of opening and reading letters persisted for many years; it first took place in 1889, and was still present when the case was published, in 1902. Whenever he had to open and read a letter, his whole frame shook with emotion. When it was absolutely necessary for him to read a letter, however, he had to call into play all his force of will in order to succeed in tearing the envelope open and read the letter.

The physical and functional condition of the nervous system was normal. As regards the general sensibility, the patient showed marked endurance to physical pain. The special senses were normal. The psychic examination showed the attention to be good, perception rapid, intelligence well developed, culture highly marked, consciousness clear, and he fully appreciated his psychic disturbance. Memory was excellent. The patient was highly emotional. Besides the disturbance here considered, however, the will-power was good.

From a clinical point of view the two cases in question are of considerable interest. In Battistelli's case, X. X., there existed "a morbid sentiment of emotion accompanied by some impairment of the will-power." In my own case, M. M., we have "emotiveness with markedly impaired volitional power".

What does X. do when he receives a letter? He holds it in his hands and lacks the psychic force to tear the envelope open. A sinister current of thought disturbs his mind: the sealed letters in his hands inform him of woeful events. When told that his apprehension is unfounded, and he tries to tear the envelope open, he fails in the attempt. He is anxious to rid himself of his peculiar disturbance, of which he is fully conscious, but his anxiety is in vain.

M. is also anxious to rid herself of her psychic disturbance of which she is fully conscious, but all her efforts in this direction fail to bring about the desired results. She is vexed by the antagonism to her desire to tear the envelope open and the failure to accomplish the act. The contrasts end in an "unsuccessful volition" (Battistelli). The consciousness of this non-success becomes the cause of the anxiety that accompanies the "psychic contrast".

Both cases, then, represent two abulics or, better, partial abulics with exaggerated emotiveness. These conditions indicate the fundamental psychological bases upon which "phobias" develop.

What is the clinical significance of the "phobia" in M.? Does it represent a phenomenon of degeneration, neurasthenia or psychasthenia? It is certainly important to properly diagnose cases as regards the above points: the prognosis and treatment depend on the diagnosis.

Formerly, "phobias" were considered as simple *idées fixes* or as emotional manifestations caused by imperative conceptions. The latter were said to affect both the ideation and the affective sphere. According to Morel, for instance, a "phobia" is an *emotional delirium*, exaggeration of emotiveness in relation to an obsessional idea. Magnan considers "phobias" as manifestations of degeneracy. Tamburini is of similar opinion. Krafft-Ebing says that "phobias" relate to degenerative forms with neurasthenic bases. The etiology and symptomatology of the "phobias," however, show that they differ with every case. They should, therefore, be analyzed in their different forms: the exclusively degenerative form, the neurasthenic form, and the psychasthenic form.

To which of these forms does that of M. belong?

Considering the main characteristics of the three respective forms, we find that in the degenerative form the important diagnostic elements are: the physical, psychic and functional as well as hereditary stigmata; the absence of the characteristics of the neurasthenic forms; persistence and predominance of

the psychic disturbance; the odd, superstitious and atavistic nature of the incoercible idea, and the precordial uneasiness that is often marked and prolonged.

In the neurasthenic form dyspeptic disturbances are marked; there is insomnia, intellectual or physical fatigue after the slightest exertion, tendency to mentally exaggerate the intensity of the trouble, loss of confidence in one's self, neurasthenic heredity, etc., that generally accompanies "phobias". The latter are intermittent in form and rather common-place in nature.

In the psychasthenic form the characteristics of one's own personality are exaggerated; there is a tendency to pessimism, false reasoning and the notions of the relation of cause and effect are erroneous. The "phobia" is less tenacious and more coercible.

Turning back to the case M., we find her history negative both in the ascending and descending branches of the family; there are no psycho- or neuropathic disturbances, alcoholism, tuberculosis or syphilis. The intra-uterine life of the patient was normal. Her physical and mental development during childhood were normal. Puberty and adolescence were normal. The anthropological examination showed nothing abnormal. The physiological and neurological examinations were negative. Digestive, trophic, sensory, motor and reflex functions—normal. Finally, apart from the disturbance under consideration, the psychic examination was normal. Her main psychic disturbance consists of a defective impulsive function in the volitional sphere and of an accentuated emotiveness.

The clinical analysis of the case does not warrant our classing her disease in the neuro- or psychasthenic groups. There was no *surménage* or any of the other fatigues that can point towards neurasthenia. The only thing that can lead us in the diagnosis of the case is the aspect and course of the "phobia".

In the neurasthenic form the "phobia" is generally less fantastic than in the degenerative form. In the neurasthenic form the "phobia" is also apt to be of periodic or intermittent onset, not accompanied by any precordial oppression, as is generally found in the degenerative form. There is no characteristic in the "phobia" of M. to warrant its being classed in the psychasthenic group. The only group in which her "phobia" can be classed, therefore, is the degenerative group. Yet the symptomatology of her "phobia" does not justify this classification. Nor do her hereditary and clinical histories warrant this classification. Considering, however, that her "phobia" has lasted 13 years, that its aspect is absolutely absurd and superstitious, and

the fruitlessness of every attempt of the patient to conquer her fear of reading a book or letter, seem to point to the degenerative nature of the "phobia".

The case of Battistelli, X. X., is also of a degenerative nature.

How can one explain the existence of a degenerate constitution in the absence of all degenerative stigmata and in face of a normal intra- and extra-uterine life? In such cases one can only suppose the existence of a latent psychic invalidity. In some cases a physical or moral shock may readily bring to light a latent psychic invalidity. Some cases, perfectly normal physically and of perfectly normal psychic life, may have a latent psychic invalidity that can be called out only by an extraordinary physical or moral shock. From the standpoint of the prognosis, it is important to take these points into consideration.

The prognosis in such cases should always be given with some reserve. Generally speaking, subjects stigmatized with congenital psychiatric predisposition are not easily cured. Cases that had passed many years of normal psychic life and suddenly present some psychic disturbance may be given a more favorable prognosis. One should always bear in mind, however, the degenerative nature of the disturbance. The duration of the trouble also has some significance: the shorter its duration, the better its prognosis. An imperfect recovery may also be followed by a return of the disease. If the remissions are frequent, the disease may finally become chronic.

The treatment in such cases is palliative. To the good hygienic treatment should be added psychic treatment. The latter is becoming more and more important. The method of re-education, advocated by Bernheim, Brissaud, Janet and others, is considered of importance. Good food, rest and hygiene are to be observed. Moral reasoning with the patient, showing him the absurdity of his queer fears and the possibility of reaching again one's normal condition are of value. Such treatment may bring about marked improvement and even a cure.

Italy, November, 1904.

THE JOURNAL OF MENTAL PATHOLOGY.

Edited by LOUISE G. ROBINOVITCH, B. ÈS L., M.D.

VOL. VII.

1905.

No. I.

STATE PRESS, PUBLISHERS,
NEW YORK.

MSS. and Communications should be addressed to the Editor,
28 West 126th Street, New York.

Address bulky mail matter to P. O. Box 1023, New York.

This Journal is published bi-monthly, except in August and September.
Price of subscription, \$2.50 per annum. Single copies, 50 cents.

Original researches and other MSS. will be carefully considered, and if found unsuitable will be returned, if accompanied by stamped, self-addressed envelope.

THE PHASES OF CONSCIOUSNESS FROM THE MEDICO-LEGAL POINT OF VIEW.

Psychiatry and neurology have brought to light the fact that subjects committing criminal acts while in a condition of obscured consciousness are not responsible before the law. In some of the civilized countries the law bows to this dictum of the scientist. The irresponsibility of subjects committing crimes during post-epileptic delirium, somnambulism and allied disturbances, is accepted on the ground that the subject is unconscious of his surroundings at the time of commission of his crime. Up to a recent date, all clinicians were agreed on the point that unconsciousness characterized all the acts committed during post-epileptic delirium, somnambulism and similar disturbances. More recent study of these affections tends to prove that consciousness is not always totally obscured in these states. One of the most recent papers on this question is that by N. Vaschide and P. Meunier, entitled "Contribution to the Study of Mental Impulses," published in this Journal (Vol. V, Nos. 4-5). According

to the facts adduced in that paper, absolute loss of consciousness is not a necessary accompaniment of what may be termed an equivalent of post-epileptic delirium. In legal medicine, this new point of view is apt to cause some difficulties as regards the present point of view on responsibility for criminal acts committed during such delirium: while the law generally admits the plea of irresponsibility in cases of criminal acts committed during complete unconsciousness, irresponsibility for similar acts committed, of which remembrance remains, either during the wakeful or the hypnotic state, is as yet a novelty in legal medicine. Clinical facts tend to show, however, that we may look for this new departure in legal medicine in the near future. That excellent psychiatric clinician of Nantes, Dr. Biaute, recently had occasion to appear before a legal tribunal and cause the release of a woman who had killed her lover while in a state of somnambulism. The case is published in *Annales Medico-Psychologiques*, November-December, 1904. In the wakeful state, the woman had absolutely no recollection of her deed, but Dr. Biaute succeeded several times, in the presence of two other members of the medico-legal commission entrusted to examine the case, in making her enact the killing of the man in all the details that accompanied the reality. The patient was simply hypnotized, and during her hypnotic sleep she was told to enact the murder. Needless to say that simulation was out of the question here.

While cases like that of Dr. Biaute are exceptional, their existence should not be disregarded. The dearth of reports of such cases is probably due to the lack of our understanding of the various phases of consciousness and our consequent inability to recognize them when we see them. Now and then we report and read of peculiar and unaccountable criminal acts apparently committed in unconscious states, but we do not yet know how to study them. The newer researches and discoveries are simplifying our methods of investigation of the various phases of consciousness. Striking cases like those mentioned above, and that of Prof. Tschisch, entitled "Larval Epilepsy," published in this Journal (Vol IV, page 34), seem to present an endless source for the study of consciousness in its various degrees. The medico-legal import of such study is obvious. Dr. Biaute lays stress on the fact that absolute loss of remembrance of acts committed during somnambulism is not verified in all cases. This fact he has demonstrated in his case mentioned above, in which remembrance could be evoked during hypnotic sleep. He also mentions the case related by dom Duhaget to Fodéré, in which the would-be murder of a friend was not remembered spon-

taneously:—when questioned by the eye witness of the somnambulistic act, the poor Jesuit admitted having dreamt a terrible dream,—that he had killed his friend. He then related every detail of that “dream,” how he had plunged a dagger into his friend’s breast, etc. The friend was himself the witness of the entire scene and escaped being killed simply because he happened to be out of bed.

In the instances related above it seems that acts committed during post-epileptic delirium, or what seems to be its equivalent, and somnambulistic states, may be remembered by the subject in various conditions of consciousness and with various vividness of memory, respectively. A thorough study of these phenomena would elucidate some clinical as well as medico-legal questions.

THE NEWEST CONCEPTION OF CONSCIOUSNESS AND WILL-POWER.

Under the heading of “*Les illusions des psychologues*” Prof. G. Sergi publishes a striking paper in *Archives de Psychologie* (November, 1904). He says that the terms “consciousness” and “will-power” are relics of ancient language and do not correspond to the states we mean to express by them—because those states do not exist. Consciousness is nothing in itself; it is neither a substance, a quality nor a condition of what is called the soul. Consciousness, he says, is simply a revelator of phenomena that are brought into play and succeed one another without intention or activity on our part. When one is thinking passively, it is not consciousness that is manufacturing his thoughts; the latter display themselves by a different process, and consciousness is simply the revelator of the thoughts; besides, this revelation is not always a necessary accompaniment of cerebration. The phenomenon of thinking is similar to all other phenomena of activity in nature. The mechanism of thinking may be compared to that of respiration, or the cardiac function. In nature no activity develops spontaneously. Every activity in nature is brought into play by an action external to itself. The rhythmic, continuous and incessant action of respiration and cardiac beat, for instance, are automatic acts (although some physiologists consider them reflex) that have their origin in causes external to themselves. In respiration, the entrance of air into the lungs of the new-born starts the respiratory activity that lasts during the individual’s life-time. The first impulse of the cardiac vesicle is not quite as easily explained, but the principle remains the same as in that of respiration: there is an initial

external force, but never a spontaneous one. The same principle is also applicable to the mechanism of thought: every thought is brought into play by an external impulse that is called in psychology *suggestion*. The various forms of suggestion, such as words, visions, sounds, odors, etc., constitute the external impulse to mentalization both in the normal and abnormal subject. Consequently, cerebration is a passive act in which consciousness does not participate, but simply reveals to us what is going on in our brains. The same mechanism is applicable to so-called active or creative cerebration: the writing of a book, etc., is enacted through the external impulses crowded in our minds. The suggestion that the various thoughts present to us provokes mental activity without there being any participation of consciousness. The act of thinking, therefore, is unconscious, but the representation of thought may or may not be conscious. We and our consciousness are only passive spectators of the mental phenomena as we are passive spectators of other physiologic vital phenomena enacted within us.

When the psychologist and psychiatrist speak of responsibility or non-responsibility of individuals, because they enacted thoughts that were conscious or unconscious, those scientists lay down their dogmas on the ground of an illusion in science.

The accepted conception of will-power is also an illusion. If we perform an act, it is not because we *will* to act but because an external excitation calls out the response in the form of that act. When inanimate objects react, they are not conscious of their activity, but we are conscious of ours. No matter how complex our acts are, and no matter how much intellectual reasoning accompanies them, their nature always remains reflex in spite of their being termed *voluntary*. It is not our will that prompts our reactions, but simply our desires or persistence of sentiment that require satisfaction—hence our reaction. In legal medicine, criminal acts committed with *premeditation* are considered as being far more serious in nature than are acts committed by impulse. This is due to our illusion of the conceptions of will and consciousness. Neither the will nor consciousness cause any reactions. It is the desire or persistent sentiment that call forth the reaction, both in impulsive acts and in those with premeditation. Will does not exist in either case, as it is superfluous.

Psychologists and moralists speak of *inhibition* as a voluntary function. Formerly we believed in the existence of cerebral inhibitory centres. This was found erroneous and was supplanted by simple antagonistic action. As the author does not admit the existence of voluntary motor centres, however, he also discards

the notion of centres for antagonistic action. In order to inhibit an act, he says, the impulse that calls out the act should be abolished or subdued, because the impulse expresses the desire and sentiment. The inhibitory or antagonistic force, however, cannot be voluntary, but it can be automatic. Individual education of sentiments and passions regulates their intensity, form of manifestation and automatic reaction.

Prof. Sergi insists that psychologists are nursing an illusion when they deal with *consciousness* and *will-power* as psychological entities.

THE HISTOLOGICAL BASIS OF REMISSIONS IN GENERAL PARALYSIS.

The question of the periods of remission in general paralysis is both interesting and puzzling. As the anatomopathology of the disease consists of progressive and fatal destruction of the cerebral elements, it is difficult to explain the occurrence of periods of remission that are often characterized by marked mental lucidity. Recent researches in cerebral histology seem to throw some light on the subject. Dr. J. Dagonet, in *Bulletin de la Société de Biologie* (Oct. 22, 1904), considers the matter on the basis of cerebral anatomy. He examined the brains of three typical cases of general paralysis, using the Ramon y Cajal newest method for coloring the neuro-fibrils. He found that the latter remained intact, retaining their normal characteristics, while the corresponding nervous cells were markedly altered. This fact, the author says, indicates that the nervous cells are not the trophic centres of the neuro-fibrils; the latter are independent of the cells. According to Dr. Dagonet, the persistence of the neuro-fibrils explains the occurrence of remissions in the general paralytic: even after attacks of hebetude of months' standing, patients regain their normal consciousness.

It is most desirable that further studies of this question be made and some more light be shed on the relation between mental function, the nervous cells and their neuro-fibrils.

TRANSLATIONS AND ABSTRACTS OF CURRENT LITERATURE.

Psychic Disturbances During the Course of Cerebral Arterio-Sclerosis.—DRS. S. SOUKHANOFF AND I. VEDENSKI:—

1. There are psychoses that are caused by and intimately related to cerebral arterio-sclerosis; these psychoses are distinctly different from senile dementia in the strict sense of this term.

2. A special form of mental feebleness of progressive course characterizes the psychoses due to cerebral arterio-sclerosis.

3. The course of the disease is of long duration, bad prognosis, and may appear in various forms.

4. The main psychosis during the course of cerebral arterio-sclerosis is *dementia arterio-sclerotica simplex*. In some cases may be observed acute psychic disturbances that are followed by mental impairment. This mental impairment is characteristic of itself. The psychosis due to arterio-sclerosis may assume various forms,—melancholia, mania, amentia, etc., according to the individual reaction (*Journal Nevropatologii i Psichiatrii Imeni Korsakova*, No. 5, 1904).

(From the *American Journal of Insanity*, Vol. LXI., No. 2.)

1. A Case of Moral Insanity with Repeated Homicides and Incendiarism and Late Development of Delusions.—

Dr. HENRY R. STEDMAN: The history of the professional nurse, J. T., who was held on the charge of murdering Mrs. M. G., at Cataumet, Aug. 13, 1901, is given in detail. It is stated that the nurse had confessed having poisoned twelve patients and having made two unsuccessful attempts to poison others. She said, in part, "why don't I feel sorry and grieve over it? I cannot sense it at all. I seem to have a sort of paralysis of thought and reason." Among other impulses, she suffered from inclinations to incendiarism. The conclusions in the medico-legal report of this case are:

"1. The prisoner, J. T., comes of a family in which intemperance and mental weakness and disorder are prominent disease features.

"2. Her utter lack of moral sense has been evident from childhood in her incorrigible proclivity to falsehood, dishonesty, mischief-making, general unreliability and probable theft. The good moral, mental and religious training which she received in her youth resulted in no modification of her character, and were practically thrown away on her in that respect.

"3. Her moral insensibility is further apparent in the absence of sense of fear before, during or after the commission of her crimes, and of course, sorrow or genuine affection at any time. This defect is even more forcibly shown by the fact that her chief victims were her especial friends.

"4. Her lack of any appreciation of her situation, her levity under such circumstances, and her inability to realize the enormity of her deeds are strong evidences of mental weakness.

"5. That an irresistible propensity propelled her to crimes of arson and murder, is shown by the great frequency and variety of such acts, and her continuance in them, regardless of consequences.

"6. There is an absence of any apparent motive for her criminal acts in some cases, and inadequacy of motive in many of the others. This is shown in the total lack of evidence of pecuniary gain or satisfaction in revenge as a rule, except minor thefts and transient enmity. These would be powerless with sane criminals as incentives to habitual homicide.

"7. The prisoner's disease-history and present mental state correspond with a well recognized form of mental defect of a moral type due to congenital degeneration, in which there may be little or no intellectual disturbance that is apparent to the ordinary observer.

"Therefore, we are of the opinion that she was insane and irresponsible at the time of the homicides with which she is charged, and is so now; that, her disease being constitutional, she will never recover, and that if ever at large again she would be a constant menace to the community."

The patient eventually developed delusions of persecution.

2. Some Metabolism Studies with Special Reference to Mental Disorders.—OTTO FOLIN: The author claims that the metabolism experiments, of which his conclusions are given below, are the most extensive on record in connection with the insane. He says:

1. From a constructive, positive point of view it must be admitted that the experiments teach very little that is tangible concerning mental diseases except for the strong suggestion that they contain,—namely, that in general paralysis we have a disease that may be associated at one stage or another with some demonstrable metabolism disorders.

From among the other classes of the insane, individual peculiarities or abnormalities of metabolism, *i. e.*, pronounced variations from the standard values given in one of the tables in the

paper, are also very numerous, but so far it has been found impossible to identify any one metabolism peculiarity with any particular form of mental disorder.

2. From a destructive, negative or critical point of view, it is believed that the data given prove the untrustworthiness of all those metabolism experiments, old and new, which report a "characteristic" increase or diminution of any of the urinary constituents included in this research (*i. e.*, volume of urine, total nitrogen, urea, ammonia, uric acid, kreatinin, organic bases, total sulphates, ethereal sulphates, "nutral sulphur," phosphates, chlorides, organic or mineral acids, indican) as associated with any particular one of the ordinary mental disorders.

It is not claimed that such characteristic abnormal metabolism may not exist, but simply that the experiments recorded in medical literature are insufficient to demonstrate the fact.

3. From a general physiological point of view, it is believed that the data contained in a table in the paper are valuable as regards the exact figures of composition of a large number of urines, tending to throw light on the laws of the normal composition of urine.

3. Sensation and Motion.—Dr. FREDERICK C. GESSNER: Special remarks are made on sensation and motion. Some of the conclusions are that motion reveals itself merely as the means by which nature expresses and communicates sensation; sensation is the soul of all existence, motion is the image; and if motion prevails throughout the universe, it only proves that sensation is omnipresent.

(From "*Mental Defectives*," Barr).

1. Idiots Savants.—Some of the remarkable cases of "learned idiots" are cited here. Langdon Down:—One boy could model ships from drawings and carve with great skill, yet could not read a sentence. Another exhibited marvelous skill with crayons, while his higher faculties of the mind were a comparative blank. Another case is that of a boy with tenacity of memory: having once read a book, he could recite pages *verbatim* without an error. Another boy could tell the tune, words and number of almost every hymn that he had read. Another boy could tell the name and address of every confectioner's shop he had ever visited, and the date of each visit. One child could tell the date of arrival of all the children at the institution, and could

give accurate information of each when needed. One boy, about twelve years old, could multiply any three figures by three other figures with perfect accuracy, as rapidly as they were written; yet he was of such low mental grade that he could not tell the name of his physician whom he saw daily during a period of two years.

Maudsley describes the case of an imbecile who, after once reading a newspaper, could, with his eyes shut, repeat what he had read word for word.

In the Asylum of Earlswood, England, the author saw a case of a middle-aged man, an imbecile of middle-grade, who was a wonderful engraver, and could copy steel engravings with such accuracy and precision that it was almost impossible to distinguish the copy from the original.

"Blind Tom," a wonderful musical idiot savant, was able to catch and reproduce any air he heard, and to play two tunes on the piano at the same time. Of very low grade, he would get up when his playing was finished and applaud himself.

The peculiar gifts of the idiot savant include aptitudes for music and art, powers of imitation, rapidity in arithmetical calculations and a retentive faculty especially as regards dates and events.

The author agrees with Down that the idiot-savants are almost exclusively male subjects. The only female idiot-savant of which the author has read is Quénan, an idiot at the Saltpêtrière, who was a rare musician.

2. Asexualization.—Dr. Everett Flood reports 26 cases in which the operation was practiced; 24 of the cases were epileptics. Some years after the operation, the mental condition was improved in only three cases, the moral—in four, two kleptomaniacs had reformed, one who was salacious had improved, and the temper was improved in all but four cases. The sexual appetite seemed to disappear in all but two cases, and appeared in these only periodically. The effect on the epileptics was favorable. In some cases the attacks ceased altogether, while in others they returned after an immunity of two years.

Sexual desire is not abated if the operation is performed late in life.

3. The Love of Music, that seems the one clue leading through the maze of the development of backward races and of degenerate natures, is strongly evidenced among the feeble-minded. Susceptible both to its influence and training, they readily absorb the mysteries of notation, harmony and rhythm.

Although the majority of the defectives susceptible to instrumental music are chiefly of high grade, some of middle-grade frequently also show an eagerness and perseverance in the study of music; this is generally a marked contrast to their apathy and indifference to letters and figures.

The Causes of Idiocy.—PROF. KOVALEVSKI: A long list of causes of idiocy is given, among which are heredity, alcoholism, syphilis, scrofula, tuberculosis, chronic inanition, etc. Epilepsy, the neuroses and psychoses are also considered. The largest number of idiots come from idiot parents. Although marriages between idiots are rare, Esquirol published a case of an idiot mother who gave birth to two idiot children and Howe reported a case of idiot parents who gave birth to three idiot children. Psychopathic parentage gives a percentage of 45 to 50 idiot offspring. If the mother suffers from neuro- or psychopathic disturbances, the first born children are generally affected with idiocy, and if the father is subject to psycho- or neuro-pathias, the last children are born idiots. Consanguineous marriage is an important source of idiocy, epilepsy, deaf and dumb subjects, etc. Seventeen families of consanguineous marriage gave the following results: of their 95 children 44 were idiots, twelve scrofulous and undersized, and deaf and dumb and one a dwarf. According to various statistics, idiocy ranges in such families between 5 per cent. and 3.76 per cent. The evil, however, lies not in the consanguinity, but in the physical and mental status of the parents. Alcoholism of the parents is responsible for 41.1 per cent. of idiot children. In such cases the alcoholism is not necessarily of long duration; intoxication at the time of sexual congress suffices to cause the evil. This fact is confirmed by statistics and by verbal statements of mothers whose children are idiots. Although the percentage of idiots brought into the world by active syphilitic parents is small, the noxious effect of this disease cannot be denied: the majority of children born of syphilitic parents die during infancy or do not survive uterine life. Bourneville gives the percentage of idiocy from this cause as 1 per cent., Piper and Timofeiev, 5 per cent., the author himself found among 70 idiot children, 6 whose parents were syphilitic, or 8.5 per cent. The children of syphilitic parents are more apt to be afflicted with juvenile dementia and insanity. Alcoholism of the wet-nurse, forceps delivery and other causes are also enumerated (*Vestnik Dushevnikh Boleznei*, No. 6, 1904).

The Psychic Slowing and Disturbances of Evocation of Ideas of the Melancholiac.—MASSELON: The process of evoking ideas

is a complex phenomenon into which various cerebral factors enter. The evocation may be spontaneous—accomplished without any mental effort, or voluntary—through mental effort. The process involves direction of the mind, and attention by virtue of which the direction, images, ideas and mental representations are fixed in the mind. It is endeavored in this study to find which of these mental factors is most impaired in the melancholiac. The cases of melancholia chosen are those of true melancholia—particularly designated by Kraepelin as *melancholia of presenile involution*. The tendency of mental direction seems to be intact in the melancholiac: when asked a question he knows in which direction the ideas of his answer should be made; he tries to fix his attention in order to have a clear mental representation of his answer and attempts by a mental effort to strengthen the representation. His attention, however, is fixed slowly and with great difficulty. Besides, even when he succeeds in fixing his attention there is slowness and difficulty in the evocation of ideas. The patient realizes, nevertheless, the failure of his attempt and this consciousness makes him suffer. This feeling contributes to his mental pain. Melancholia is characterized primarily by disturbances of evocation of ideas and slowing of the psychic process. The different factors of the evocation of ideas, however, are differently impaired. The tendency of mental direction remains intact: even the stuporous melancholiac knows how his answer should be directed and he makes efforts to direct it properly. The disturbance is more marked in the domain of attention, the latter being fixed with difficulty. The main disturbance lies in the representation of ideas that are evoked with great difficulty. The contents of the representation is intact, but its evocation is slow and difficult. This psychic slowing of the melancholiac is due to disturbances of mental synthesis: an impaired vivacity of the mental images is the cause of the difficulty of evocation. The mind's logic remains intact, but the elements of the mind are less capable of movement and direction (*Journal de Psychologie Normale et Pathologique*, November-December, 1904).

A Case of Injury to the Cervical Portion of the Spinal Cord with Post Mortem Examination.—DR. J. HOWARD MORGAN: A man fell from the second to the first floor of a building and sustained a fracture of the spinal column in the cervical region. After the accident the patient's pulse became intermittent and there was paralysis of the voluntary muscles below the neck, anesthesia below the upper deltoid region in the arms,

and in the rest of the body below the third or fourth ribs. The rectum and bladder were paralyzed, the pulse was subsequently irregular, oscillating between 54 and 60 beats per minute and the temperature was 97.2 to 98 degrees F. The reflexes were markedly exaggerated and more marked in the left leg than in the right. Eight days after the accident the diaphragm presented complete paralysis and it was impossible for the patient to breathe with the right chest, the left side of the chest alone showing exaggerated breathing. The patient died three days later. The autopsy showed that the laminæ of the fourth and fifth cervical vertebræ were fractured, there was an extra-medullary hemorrhage, but no external wound of the cord. Near the upper portion of the cervical enlargement of the cord, on the right side posteriorly, was a faintly bluish discoloration nearly 1.5 cm. in length, the situation corresponding very nearly with the fourth, or fourth and fifth cervical vertebræ. Microscopic sections showed the vessels to be fuller of blood than usual about 2 cm. above the discoloration; 1 cm. above the discoloration the small beginnings of fusiform clots were shown in cross-sections; the section through the discolored portion presented more blood and reddish softening of the right posterior and lateral columns. Below this region the hemorrhage extended downwards, involving the central portion of the cord and finally passing into the left anterior column at a point near the lower portion of the cervical enlargement—at about the upper portion of the second dorsal vertebra. Below this point the cord was apparently normal throughout (*The Providence Medical Journal*, November, 1904).

Epilepsy, Pathogenesis and Therapeutic Indications.
Second Part: Treatment of Epilepsy.—DR. ALEXANDER PARIS: The first part of this paper was reported in Vol. VI, Nos. 1-2, 1904, page 35, of this Journal. In the second part the treatment of epilepsy is considered on the basis of the pathogenesis of the disease. No new ideas are presented: the bromides, hygiene, diet, calm, etc. are recommended. Prophylaxis of the disease is insisted upon and especial stress is laid on the prophylactic treatment of the fetus of epileptic parents. Moderation of the functional activity of the thyroid and genital glands should be observed. Moderation of the thyroid gland can be regulated by causing moderation of the genital organs. This can be accomplished by increased activity of another glandular system—the liver, kidneys, skin. Camphor, lupulin, prolonged baths, diuretics and laxatives will bring about the desired results. The main point to be attained in the curative treatment is to moderate the

brain excitability common to the elipeptic. The bromides generally bring about the desired results. When the bromides fail, the addition of trional, from 1 to 1½ grams is highly recommended. As the epileptic is often of rheumatic diathesis, the author has tried, and with success, benzoate of lithine. The lithine acts on the kidneys and the benzoic element probably decreases the thyroid activity. Lavage of the blood, laxatives, etc., should also be considered. Camphor administered from time to time serves a double purpose: depressing the genital activity and acting as an intestinal antiseptic. If good results are obtained in some cases from injections of artificial serum, the method is not always tolerated by the patient and not easy of handling in private practice. If the proper treatment were instituted for epileptics in due time—before they are born, the disease could readily be eradicated (*Arch. de neurologie*, November, 1904).

Lumbar Puncture from the Diagnostic and Therapeutic Points of View.—GERHARDT: Lumbar puncture is of varied clinical utility. Among others, it helps differentiate between various cerebral complications of acute diseases and cerebral abscesses that can be remedied by surgical intervention; it helps differentiate between cerebral syphilis and other diseases of the brain and spinal cord (excepting tabes) and between general paralysis and the simple psychoses. Therapeutically lumbar puncture is used in cases of acute and sub-acute serous meningitis and in syphilitic cephalalgia. The results are less favorable in hydrocephalus, meningites and cerebral tumors. Although 26 cases of death consequent on lumbar puncture have been published, the operation is not accompanied by any danger. The precautions to be taken are: regulation of the flow of the fluid, extraction of a few cc. only and the avoidance of lumbar puncture in cerebral tumors. Nonne has seen recovery from traumatic hydrocephalus after repeated punctures. He also cautions against puncture in cases of cerebral tumors. Schoenborn has practiced puncture on 100 patients in the Heidelberg Clinic: 25 patients with tabes presented lymphocytosis without exception; the same was true of 13 cases of meningitis; three out of five cases of multiple sclerosis presented lymphocytosis; negative results were obtained in cases of tetanus, vertebral caries, cerebral tumors and neuroses. Cryoscopy of the fluid was practiced in 20 cases and the results were not constant. Tobler has made 120 punctures on children. Young children stand the operation particularly well. In one of his cases of epidemic meningitis 100 cc. of the fluid was drawn and 650 cc. was drawn in a case of hydrocephalus. Where there is no aug-

mentation of the fluid, he says, one should be careful, as the extraction of even a small quantity of the fluid is followed by some meningeal symptoms. Therapeutically, good results have been obtained in cases of cerebral compression and post-meningeal idiocy (*Archives de neurologie*, November, 1904).

Treatment of Epilepsy. Hyperbromuration Through Hypochloruration.—DR. CH. ACHARD: The hypochlorurated diet does not, in itself, cause a decrease in the number of epileptic attacks; nor does hyperchloruration cause an increase of their number. The variation of the amount of chloride in the organism is the effect, not the cause, of epileptic attacks. Salt diminishes the action of the bromides. Not all salts have a similar effect. Phosphate of sodium, for instance, may be given to epileptics in doses of from 5 to 10 grammes without influencing the action of the bromides administered at the same time. Chloride of sodium seems to influence the effect of salts quite near to itself in nature,—the halogenous compounds: the bromides and, perhaps also, the iodides. A milk diet is an excellent hypochlorurated diet. Unfortunately, patients tire of the monotony of this diet. A mixed diet free from salt is preferable. According to Toulouse, the diet need not be achlorurated; it is sufficient that it be simply hypochlorurated. The amount of salt we daily absorb with our food is 2 grammes. This amount is abstracted in the treatment of epilepsy by hypochloruration. The amount of bromide given during this régime is from 2 to 4 grammes. When the patients seem improved, it is well to increase the daily allowance of salt before the dose of bromide is decreased. This modification should be made very gradually, in the course of months, and even years.

When bromides are administered during hypochloruration, it is important to closely watch the patient's condition: severe toxic effects are apt to be manifested in some cases, even when small doses of bromide are being administered. Merklen and Heitz report such cases. Salt in the economy has a protective influence against poisons. Hypochloruration, consequently, decreases this protective influence (*Rôle du sel en thérapeutique*, 1904).

Saturnine Intoxication.—DR. CH. MIRALLIE: Lead poisoning affects all the tissues of body, but the nervous system is especially predisposed to saturnine intoxication. Lead poisoning

among the working classes is aggravated by the fact that alcoholic abuses generally accompany it. In France, there is a popular belief that absinthe is an antidote for lead poisoning. The results of this combined poisoning among the working classes can readily be imagined.

The descendants of parents affected with lead poisoning are also profoundly affected. Abortions are frequent among pregnant women affected with lead poisoning. Balland reports 100 cases of pregnancies during the course of lead poisoning. Of these, 42 ended in abortion, 32 in premature birth, and 6% were still-born. The children who are brought into the world are sickly. When the lead poisoning affects the father, the results are quite as bad. The author quotes the 300 pregnancies in 59 families reported by Bourneville, showing the effect of paternal lead poisoning: 112 pregnancies ended in abortions and stillbirths, some of the infants died of nervous disturbances, 27 children died from other causes than lead poisoning, 62 children were abnormal, idiots, epileptics, etc., and only 99 children were normal. Porak's case is cited, in which all the organs of a fetus, conceived while one of the parents was suffering from lead poisoning, contained lead. The encephalopathias due to lead poisoning are grave in nature, and a patient thus affected may die within a few days from the onset of the disturbance. Various mental disorders may characterize the affection.

The struggle against lead poisoning among the workers engaged in the lead industries in France has been going on for the last 125 years. At various times the medical profession has pleaded for the substitution of non-toxic substances for the most toxic lead compounds,—white and red lead. The Senate is considering the question regarding the industrial uses of white lead. Hope is entertained that in the near future the law will enforce the substitution of harmless substances for white lead now generally used in various industries (*Gazette Médicale de Nantes*, No. 50, 1904).

Progress in the Indian Schools.—The Annual Report 1904, of the Superintendent of Indian Schools, Miss Estelle Reel, has been submitted to the Commissioner of Indian Affairs. It is shown that educational advancements have been made during the year in the general field of Indian education. The Indian child is taught to speak English in a shorter time than formerly. The policy of giving agriculture foremost place in Indian education has been continued during the year and the re-

sults obtained are satisfactory. The report states that marked improvements have been made in the method of instructing the boys in the various trades and the girls in cooking, sewing, laundry work and general housekeeping. The day schools have continued their good work, and their civilizing and elevating influence on the older Indians becomes more apparent every year. Statistics are given in which it is shown that the products of native industries have a greater value to the Indian than is generally known and that they form a substantial aid toward his support.

Among the evidences of the good results of Indian education are the reports of the career of returned students, which show that they are endeavoring to overcome the environment of camp life and prove themselves worthy of the education they have received. A feature of the report is the evidence it gives that the Indian is altering his ways of living to meet the requirements of an advancing civilization through the educational influence of the schools on the children who are being taught the white man's ways of living.

A Case of Bronzed Diabetes with Consideration on the Evolution of the Disease.—DR. MARGAIN: The patient was 47 years of age. There was no rheumatic or malarial history. Chronic alcoholism in the past. Polyphagia of a moderate degree, polydipsia, polyuria and pollakiuria were of two months' standing. Bodily wasting and spells of ascites had set in two years previously. The patient's skin was uniformly pigmented, the coloring being of a deep hue. The mucous membranes were normal in color. Retraction of the palmar aponeuroses of old standing. The conjunctiva and under-surface of the tongue were jaundiced. Marked adynamia. Marked tenderness in the hepatic region. Liver, hard and voluminous. Digestion and respiration, normal. Pulse, irregular. Blood vessels, hard to touch. Absence of patellar reflexes. Other reflexes normal. History of old neuralgias, and painful feelings in the seats of the old neuralgias. Depressed mental condition. Death—after a spell of bronchitis and generalized edema.

At the autopsy: the liver weighed 1,930 kgr. and was of a rusty color; spleen, dark, weighed 265 grammes; heart, markedly hypertrophied, weight, 600 grammes; brain, kidneys and suprarenal capsules normal; lungs, not tubercular. Histologically,—bi-venous cirrhosis, formation of pseudo-biliary ducts. Sclerosis

of spleen, pancreas and heart. Pigmentation and hypertrophy of connective tissue of lungs.

The symmetrical retraction of the palmar aponeuroses apparently indicates a disturbance of the trophic centres or of the peripheral nerves. It is questionable whether this aponeurosis retraction is an essential feature of "bronzed" diabetes. The latter disease, however, is probably intimately connected with some nervous disturbance: sometimes ocular disturbances accompany it, and there is always abolition of the patellar reflexes. This abolition may be tardy in onset (*Progrès Médical*, No. 40, 1904).

Development of Hysteria in Children.—L. BABONNEIX:

Hysteria in children is generally due to heredity. As a rule, the disease is inherited from the mother. Among 80 hysterical children, Briquet found 58 cases of parental hysteria, 2 cases of insanity and 3 of epilepsy of the parents. Of the author's own 16 cases, there were 7 histories of parental hysteria, besides 11 histories of neuroses and 3 of psychoses in the respective families. Among the various hereditary predispositions are mentioned neuropathias, rheumatic and gouty diatheses, malnutrition, tuberculosis, etc. Hysteria rarely occurs in children under six years of age.

Physiologically, the young hysterical subjects suffer from faulty nutrition and intoxication therefrom: indoxyl and, sometimes, oxalate of lime are increased in amount in the urine. Constipation is habitual.

Psychologically, hysterical subjects are given to lying. In children, the hysterical stigmata are not always found; anesthetics are rare, abolition of the pharyngeal reflex is not always found, and conjunctival hypoaesthesia is insignificant. The most characteristic trait of hysterical children is their suggestibility and lack of inhibitory psychic function. Suggestion alone suffices to cause hysterical attacks in these subjects. Heredity may be absent in some cases, but a certain predisposition always underlies the trouble. The prognosis is not bad in children,—if proper treatment is instituted in time (*Gazette des Hôpitaux*, Dec. 15, 1904).

All Crazy Within 700 Years.—According to *American Medicine*, Vol. VIII, No. 13, 1904, a Chicago scientist has asserted that all human beings will have gone insane within 700

years. Among the causes of the increase of insanity he mentions are: drink, over-indulgence in drugs, the mad rush for money, physical and mental over-exertion; the high nervous tension of life, and the present condition of woman as wage-earner and mother. The society woman also contributes to social decay: her strenuous life is also detrimental to society. The gay life of pleasure of the society woman, and the drudgery of the wage-earner "are continuously decreasing their nervous strength and energy, and brain-fagged and physically exhausted they marry; they become the mothers of physical starvelings, who develop into men and women unfit for the burdens of life. These, in their turn, live in the manner of their parents, weaker, and even less able to stand the nervous tension of work and dissipation. These people are often predisposed to insanity and nervous diseases, while often the result is degeneration and imbecility. When men make it possible for women to return to their proper place of home and motherhood, and they can cease the pitiful struggle for existence, leaving the obtaining of a livelihood to the men of the family, then the conditions that produce insanity will diminish. Among the foreign laborers, bad whiskey and beer cause more insanity than does anything else. The reason is that drink is adulterated with *cocculus indicus*, or 'fishberry,' that is used by the Chinese in catching fish. In other words, drugs and whiskey combined are good combinations upon which to build a lunatic."

Anti-rabies Vaccination in St. Petersburg. Annual Report of the Imperial Institute of Experimental Medicine.

—DR. V. KRAIOUCHKINE: 1165 persons bitten by mad dogs and other animals presented themselves for treatment, in 1902. For various reasons, only 819 of that number had been treated with the Pasteur method. The gross mortality was 0.9%, but specific conditions warrant the conclusion that the mortality was only 0.4%.

The number of animals brought for treatment was 699. Of this number, 246 dogs and 7 cats were affected.

Fifty-eight brains of animals had been received for examination from various provincial places; the virus was found in 36 of the specimens. For diagnostic purposes, 354 autopsies and 153 inoculations had been practiced.

The relatively small number of affected animals among those examined is explained by the fact that the St. Petersburg police send to the Institute all animals that have bitten anybody.

New Data Relating to the Study of Binuclear Cells. Experiments Made on Guinea-Pigs by Poisoning with Phosphorus and Bacilli of Yellow Fever (Sanarelli).—

K. A. KOUTCHOUK: Certain pathogenic agents affect the relative quantitative number of mononuclear and binuclear liver cells of the guinea-pig. The respective proportion of these cells is changed according to the agent used for the purpose. Poisoning with phosphorus was followed by a relative augmentation of the binuclear cells, while infection with the bacillus of typhoid fever was followed by opposite results. In a previous paper it was demonstrated that ligation of the common biliary duct was followed by a relative decrease of the number of binuclear cells. The decrease was from 9.88% to 5.86%. Ligation of the biliary duct gave results similar to those obtained from infection due to *bac. icteroides Saranelli*. The general microscopic changes were also similar in these cases.

These experiments show that the principal integral parts of the cell have their biological autonomy,—the parts being the nucleus and the cellular body. In the experiments it is seen that the nuclei may multiply, while the corresponding number of cells remains unchanged (*Archiv Biologicheskikh Naouk*, Vol. X, No. 4, 1904).

Some Forms of Dwarfism and Their Treatment with Thyroid Glands.—BOURNEVILLE: Infantile myxedema especially responds to thyroid treatment. Nutrition becomes markedly ameliorated, and all the functions of the body show an improvement. Intelligence is awakened, the muscular and osseous systems develop, the fatty infiltration disappears, the skin and the sweat-glands become normal. Respiration and circulation become regular, the puffiness of the face, hands and feet disappears. The growth of hair improves, and in female subjects menstruation appears. The earlier the treatment is commenced, the more beneficial it is for the subject. Improvement in subjects under treatment since childhood is so marked that an inexperienced observer would have difficulty in recognizing them as sufferers from myxedema.

The characteristic feature of Mongolian idiocy is arrest of growth. Under thyroid treatment the growth is stimulated. When the bodily growth appears to progress satisfactorily, it is advisable to suspend the treatment and watch the case. Should there be any indication that the growth is not progressing, the

treatment should be resumed. In some cases thyroid treatment during a given period is sufficient to start bodily growth that continues of itself after the treatment is suspended (*Progrès Médical*, No. 50, 1904).

A Case of Hemi-Hypertrophy in which the Internal Organs Were Also Involved.—DR. ROBERT HUTCHINSON:

A child, four months old, the fourth child in the family; all the other children are normal, the parents are healthy. The pregnancy had been normal and birth took place under normal conditions. The child was well formed at birth, except for a capillary nevus on the right knee, lower part of the left arm-pit and under the left scapula. The asymmetry developed gradually. When examined, the child presented hypertrophy of part of the left side of the body, the left arm and leg. The head, face and tongue on the left side were normal. The hypertrophy seemed to be due to subcutaneous infiltration of tissue. The child died of broncho-pneumonia in the left chest. At the autopsy it was found that the hypertrophy was due to fatty infiltration. There was no trace of vascular dilation in the hypertrophied tissues. The bones were of equal dimensions on both sides. The brain was normal and symmetrical. The pituitary body was normal. The difference in weight of the respective organs: left kidney, 56 grammes; right,—28; left supra-renal capsule, 42 grammes, right,—14; left testicle, 2 grammes, right,—0.55. The difference of weight between the lungs could not be determined. The heart was normal, and the two lobes of the thyroid gland were normal (*Annales de Médecine et Chirurgie Infantiles*, No. 24, 1904).

Infantile Cerebral Hemiplegia and Hemiataxia.—DR.

BOUCHARD: The child is four years of age, left-handed. It was noticed at the school he was attending that he had become irritable and taciturn. Medical aid was sought on account of the psychic change. An examination revealed the presence of right hemiplegia of the entire half of the body. There was also hemiataxia of the right limbs when voluntary movements were attempted. According to the history, the child had hemiparesis at birth. The trouble had gradually developed. A cerebral lesion originating during intra-uterine life was undoubtedly the cause of the trouble; the latter was aggravated during delivery that was difficult. The point of interest is the ataxia particularly

marked in the right upper limb. Ordinary infantile hemiplegia is generally not accompanied by ataxia. It is also noteworthy that in this case there were no spasmodic phenomena, atrophy, deformity or exaggerated movements. The ataxia takes place only when voluntary movements are attempted. The motor disturbances are analogous to those found in *sclérose en plaques*, but differ from them in many respects.

The hemi-ataxic form of infantile paralysis is not mentioned in classic works,—probably because it is of rare occurrence. The author has had occasion, however, to observe cases of infantile hemiplegia accompanied by hemi-ataxia in addition to the spasmodic phenomena and hemi-athetosis (*Journal des Sciences Médical de Lille*, No. 50, 1904).

The Question of Tropic Disturbances During the Course of Tabes Dorsalis.—DR. V. DOBROKHOTOV publishes a case of *tabes dorsalis* with unusual trophic disturbances and fever manifestations. Antiseptic treatment of the *mal perforant* and administration of arsenic did not influence the wounds during a period of a month. X-rays were then applied. According to the author, improvement was noticeable after the first sitting. After the second sitting, the edema of the tissues had disappeared; progressive and final healing of the wounds took place within some three weeks,—during which the X-rays had been applied at given intervals.

The temperature rose as high as 40 degrees C. at times. This was not due to infection,—because there were also spells of fever after the wounds had healed.

Trophic disturbances are met with mostly in cases with marked sensory disturbances. Theories regarding this combination are analyzed. *Mal perforant* is often an early forerunner of *tabes dorsalis*, often setting in long before the ataxic symptoms become apparent. According to Brissaud, an intimate relation exists between the shooting pains and the trophic disturbances. Mercurial treatment of the latter may prove beneficial, without affecting the course of the locomotor ataxia. Ball and Thirbierge's 3 cases are cited to this effect. The author's own case leads him to ascribe the cure to the use of the X-rays (*Journal Nevropatologii i Psichiatrii Imeni Korsakova*, No. 5, 1905).

Considerations Regarding Five Cases of Acute Psychoses Studied Histologically.—DR. A. DEBOUBAIS: Histological studies of the brains of five cases of different psychoses are presented. General conclusions: histologically, there are two well defined groups of acute psychoses,—paralytic or interstitial, and non-paralytic or parenchymatous. It is probable that eventually chronic psychoses will also come under the heading of the parenchymatous group. Under such conditions, an anatomopathological basis of study of psychoses can become practical.

It is also probable that a pathogenic unity underlies all the clinical varieties of acute psychoses,—in the sense of cerebral resistance: the course and termination of an acute psychosis depends on the intensity of action of the pathogenic agent, and especially on the cerebral resistance. Otherwise, there is no histological difference between the acute and chronic psychoses (*Journal de Neurologie*, December 5, 1904).

The Toxin of Fatigue and Its Anti-Toxin.—WEICHARDT has published a paper under this title in the *Muench. Med. Wochenschr.*, No. 48, p. 2121, 1904: Fatigue causes the formation of a special toxin in the muscles. It is difficult to obtain a sufficient quantity of this toxin in animals for examination, because during moderate fatigue an antitoxin that neutralizes the toxin is also formed. The toxin can be obtained from the muscles of animals fatigued experimentally,—so that death follows from the peculiar intoxication. The toxin obtained from such animals and injected into normal animals causes death in the latter. The author has also succeeded in obtaining an antitoxin in question. The anti-toxin is readily absorbed in the intestines. The author has experimented on himself with this substance and claims to have obtained satisfactory results (*Gazette des Hôpitaux*, Dec. 15, 1904).

The Endocellular Fibrillary Network and the Axis-Cylinders of the Nervous Cells of the Vertebrate. Various Methods of Elective Staining of the Endocellular and Peripheral Network Based on the Action of Pyridin on Nervous Tissues.—DR. ARTURO DONAGGIO: This is an exhaustive paper on the method of staining the finer nervous elements. The minute anatomy of the endocellular networks of the nervous cells is examined in detail. There are cells that have

a single endocellular network; the latter is connected with the fibrillary prolongations. Other cells have a double network, in which the fibrils of one of the networks run through the cellular elements. The author submits an interesting hypothesis on endocellular nerve currents. He suggests the idea that cells with a single endocellular network are destined for nerve currents in one direction only, while those with a double network conduct currents in two directions. The axis-cylinder connects with both networks in cells that have two networks. The axis-cylinder, consequently, conducts two kinds of currents when connected with a double endocellular network. In other words, there are cellulofugal and cellulopetal currents.

Excellent plates illustrate the networks in question (*Rivista sperimentale di freniatria*, Vol. XXX, fasc. 2, 1904).

Epileptic Convulsive Attacks and Urinary Elimination.—

J. AND R. VOISIN AND KRANTZ: Epileptic convulsive attacks do not directly modify the urinary elimination either as regards the amount of chloride of sodium or the elements of disassimilation. When there is a series of attacks, there is an augmented elimination; whereas before and after the attacks there is retention of the substances.

An epileptic attack is, therefore, a consequence of an intoxication by retention, but is not the cause of the intoxication and retention. The latter can also be found in non-epileptic mental defectives. The convulsive attack of the epileptic is in relation with the quantity and quality of the retained products. The retention may be due to a hereditary or acquired susceptibility of the nervous cell (*Progrès Médical*, No. 50, 1904).

Measuring Gustatory Sensibility in Man and Woman.—

VASCHIDE: Gustatory sensibility in appreciating salty taste is finer in man than in woman. Bitter is also appreciated readier by man, but the difference in degree of appreciation is less marked than in the instance mentioned above. Gustatory appreciation of acid and sweet is equal for both sexes. Woman's readiness in recognizing odor-taste is superior to that of man. In her household and toilet occupations, woman acquires this fineness of appreciation (*Progrès Médical*, No. 50, 1904).

Acidification of the Viscera.—A Sure Sign of Death.—

BRISSEMOREL AND AMBARD: The viscera, liver and spleen are alkaline during life; they rapidly become acid after death. This acidity can be demonstrated by puncturing the liver or spleen

with a capillary needle and depositing the pulp on blue litmus paper. If death occurred shortly before the puncture is made, the reaction is only slightly acid, but if of long duration,—a red spot is seen on the under-surface of the litmus paper. These phenomena are constant and may be observed even fifteen minutes after death (*Progrès Médical*, No. 50, 1904).

Urinary Elimination During the Course of Dechloruration.—J. AND R. VOISIN AND KRANTZ have observed the urinary elimination under the influence of dechloruration in mental defectives and epileptics. The general amount of urinary elimination is decreased, while there is an augmented elimination of the elements of disassimilation (urea and total nitrogen). The amount of phosphates eliminated is decreased. If certain authors, in experiments made on themselves, found an augmented elimination of phosphates (Claude), the incident was due to a psychic factor that is absent in the demented and epileptics (*Progrès Médical*, No. 50, 1904).

Preparation of a Neurotoxic Serum by the Method of Rapid Immunization.—ARMAND DELILIE has obtained a neurotoxic serum for dogs. The serum is obtained by making repeated intra-peritoneal injection into guinea-pigs, every five days, during a certain length of time; the substance injected is an emulsion of cerebral substance of a dog. The serum of a guinea-pig that had received one gramme of a dog's brain, five times, is neurotoxic: an intra-cerebral injection of that serum, one centigramme per animal kilogramme of a dog, kills the latter within a few hours. Smaller doses cause convulsive attacks and torpor (*Progrès Médical*, No. 50, 1904).

New York City's Crime Record for Quarter Ending June 30, 1904.—Quoting from the Report of the Police Department, the *New York Times* says that in the five boroughs, a total of 46,643 arrests were made. Of that total, Manhattan and the Bronx are responsible for 34,101. More than 4,000 arrests were for various degrees of assault. Unmarried persons made up 29,314 of the grand total. Only 453 persons were unable to read and write. The arrests cover all sorts and conditions of social life, and almost every trade. There are no bankers in the list but there are brokers and agents and dealers of all kinds, as well as twenty-six editors and reporters.

Cost of the Public Schools for the Year Ending June 30, 1904.—According to reports of the daily press, the total cost of the public school system, as given by the Commissioner of Education, is \$251,457,625. This is an increase of \$16,000,000 over the previous year. In the public schools there are 16,009,361 pupils, or 20 per cent. of the entire population of the country. As compared with the previous six years, this percentage shows a slight decrease in the number of pupils as compared with the total population. The enrollment in the private schools for the year is given as 1,093,876.

War Death Roll of a Century.—According to an exchange, Prof. Richet, of Paris, sums up the total of dead in wars during the last century as 14,000,000. Of this total the Napoleonic wars come in for 8,000,000; Crimean wars, 300,000; Italian wars, 300,000; American Civil war, 500,000; Franco-German war, 800,000; Russo-Turkish war, 100,000; Civil wars in South America, 500,000; various colonial expeditions in India, Mexico, Tonquin, South Africa, etc., 3,000,000.

The Armies of the Greatest Battles in Modern History.—In the battle of Liao-Yang there were 250,000 Japanese fighting against as many Russians. An exchange says that in no other battle recorded in history is it certain that so many men took part as met on that Manchurian plain. At the battle at Leipzig, between Napoleon and the allies, 430,000 men were engaged. The battle of Waterloo was fought by 190,000 men. In the Civil War, the three days' battle at Gettysburg was fought by 172,000 men. The enormous armies said to have been raised by the ancients are considered as exaggerations.

An Address Delivered by a Deaf and Blind Girl.—The Hall of Congress, at St. Louis, was filled to its capacity by an eager audience when Helen Keller delivered her address there.

Objection to Execution in Prisons.—In a report to the Governor, some officers of the New Jersey prison object to the holding of executions within the prison walls. The reasons of this objection are that such events in the prison have a detrimental effect on the prisoners in general. The report favors a building in the State set apart for the purpose of executions.

Extension of Parole System Suggested.—The New Jerseyites suggest that their parole system in prisons and reformatories be enlarged, so that parole inmates be under the supervision of a sufficient number of parole officials.

Alcoholism and Idiocy.—LE MARC'HADOUR quotes Turner's remarkable case as follows: the first three children, of parents who were alcoholists were born idiots. The parents then corrected their habits, and did not use any alcoholic drinks for some few years. Two children were born during that time of parental temperance, and both children were intelligent and active. The parents again became intemperate in the use of alcohol, and two more children were born during the new period of their intemperance. Both of these children were idiots (*Criminalité de l'Enfance*, Thèse, Rennes, 1903).

A Comparative Study of Idiopathic Epilepsy in Animals and Man.—DR. L. PIERCE CLARK: A number of cases of idiopathic epilepsy in domestic animals and birds are quoted from various sources and one personal case of the disease in a canary bird is published (*New York Medical Journal*, etc., December 10, 1904).

Princess Louise's Examination.—According to the *New York World*, November 6, 1904, Dr. Bachrach, representing Prince Philip, of Coburg, announces officially the scope of the examination of Princess Louise by Drs. Magnan and Garnier. The court will judge whether her mental condition permits her to manage her property.

BOOK REVIEWS.

Trattato di Psichiatria ad Uso Dei Medici e Degli Studenti. With numerous figures in the Text. PROF. LEONARDO BIANCHI, *Director, Psychiatric and Neuropathological Clinic, Royal University*, and of the *Hospital for the Insane*, Naples. Pasquale, Naples, 1904. The preceding two parts of this work were analyzed in previous issues of this JOURNAL. The present is the third and last part of this excellent text-book on psychiatry. The first chapter is devoted to the exposition of methods of examining the insane. The advice given in this regard is all that can be desired: every detail there indicates the author's long experience and practical knowledge of the insane in all their phases. The chapter on classification of insanities again indicates

the author's broad points of view: he shows the shortcomings of an empirical classification, of that based on anatomopathology, etc. For want of a better classification, he chooses the happy medium between the French and German,—one based on the teaching of degeneracy, and the other on the various degrees of cerebral development. The various clinical forms of psychoses are masterfully traced in a broad and truly scientific way: there is no appearance of any routine in the presentation of the clinical varieties; every psychosis is considered in its relation to the latest discoveries and researches, giving the reader not only a certain clinical picture of psychoses, but also enlarging his point of view on the relation of disease to society in general. The chapter on delinquency is handled on the broadest possible lines. We have accustomed ourselves to consider delinquency in its primitive relation to criminal anthropology, the author says, but the study should be vastly enlarged and also considered in its relation to sociology and psychology. He then indicates how readily we can find reckless delinquents in the higher walks of life—among the administrationists, etc. The “superior degenerate” of Magnan is understood by a few only, and Prof. Bianchi sees this degenerate in the full significance of the term. The entire scale of clinical psychoses is presented in an excellent manner. This is one of the best text-books on psychiatry of to-day. Prof. Bianchi has injected into this work the results of all the advantages he has had in his psychiatric career—those of a scientist, clinician and medical journalist.

The volume contains 844 pages. Price \$2.00.

Mental Defectives. Their History, Treatment and Training.—Dr. MARTIN W. BARR, *Chief Physician, Pennsylvania Training School for Feeble-Minded Children, Elwyn, Pa.* Illustrated by 53 full page plates. P. Blakiston's Son & Co., Philadelphia, 1904. The first chapter treats of the synonyms and definitions of mental defectives. The next chapter, comprising some fifty pages, is devoted to the history of the progress in the treatment of mental defectives. Valuable and inspiring paragraphs are to be found in this chapter:—The influence of Boerhaave, Morgagni Haller, Jean Jacques Rousseau, Jacob Rodrigues Péreire and others, on the conception of education and training of the human mind is vividly presented; and their theoretical and practical efforts in instituting facilities for educating mental defectives is well described. The

gradual development of quality and number of institutions for the treatment and care of defectives is considered, and a list of such institutions as they exist to-day is given. Classifications of mental defectives as given by various authors are examined, and the chapter following treats of the etiology of the affections in question. The author is quite conservative in his opinions on certain causes of idiocy and imbecility, especially in regard to alcoholism. He freely presents, however, opinions of authors from all parts of the world, where the subject is studied, giving the reader a complete list of causes and possible causes of mental defectiveness. Speaking of the death periods, he points out that the largest number of deaths occur between the tenth and twentieth years; but comparatively few pass the twenty-fifth year, and exceptional cases appear from thirty to forty years. Craniectomy and asexualization are presented in their true clinical significance. The general and special treatment of the defectives, as presented by the author, show that he is an experienced clinician.

The price of this volume is \$4.00.

Le Rôle Du Sel En Thérapeutique.—DR. CH. ACHARD, *Agrégé*, Faculty of Paris. Monographie No. 40, Masson and Co., Paris, 1904. This monograph is the second part of monograph No. 39,—“Le Rôle du Sel en Pathologie,” reviewed in this Journal, Vol. VI, Nos. 3-4. The present monograph deals with the question of salt in therapeutics. The amount of salt we absorb daily with our food is 2 grammes. This amount of salt is utilized by the tissues in various ways, and one part of it serves in the cells as a protective agent against various poisons. The maximum amount of salt that may be absorbed without danger to the economy is 15 grammes. An excessive use of salt may, in the long run, affect the kidneys to a more or less marked degree. The question of the amount of salt in the system is of great importance in cases of hydropsia: a chlorurated or hypochlorurated diet may determine the issue of the disease. Detailed considerations are given on the conditions that require chloruration or hypochloruration. Hypochloruration is also applied to-day for the purpose of increasing the effect of certain drugs—as that of the bromides in epilepsy. For reason of its affinity with water, salt renders valuable service in replenishing the vessels after depletion due to hemorrhages, diarrhea, etc. The important rôle of salt in the economy is based on its relatively simple and, mostly, physical action.

The Youth of Washington Told in the Form of an Autobiography.—DR. S. WEIR MITCHELL. The Century Co., New York, 1904. This biography is particularly interesting because it puts Washington vividly before our minds as he was in reality during his times. As the title of the book indicates, the biography is written in the form of an autobiography. The labor involved in putting together material culled from autobiographic notes of Washington himself and from other sources can hardly be appreciated. The work is so well done that this volume treating of Washington is probably the most valuable one on the subject we possess. There is excellent reading material in this book for the young and the old of all nations: every page of the book fairly breathes forth the manly, the ideal of the father of this country.

As for Dr. Mitchell's part in this work,—it need simply be remarked that whatever comes from his pen is always full of manliness and inspiration.

Geschlecht und Kinderliebe.—DR. P. J. MOEBIUS. Carl Marhold, Halle a. d. S., 1904. A comparative study of child-love in man and animals is made. In the female, child-love is more developed than in the male. The author fully believes in a cerebral centre of child-love and upholds Gall's teachings in this regard. A special chapter is devoted to the study of child-love in its relation to cranial form. Thirty-five illustrations of cranial forms are presented. The opinion is given that the occipital region is the seat of the child-love bump. The latter is more marked in woman than in man. It is suggested that it is more appropriate to call the "fair sex" the "child-loving sex". Among civilized people child-love may also be marked in man, and the latter's occipital region may be found more developed than normal.

Ueber den Moralischen Schwachsinn des Weibes.—M-ME. KATINKA VON ROSEN. Carl Marhold, Halle a. S., 1904.—Woman's morality has room for improvement, the author claims, and the pamphlet is written for the purpose of showing wherein the particular weakness of woman lies. The defective morality of woman is also responsible, in a large number of cases, for criminal acts of man. "Cherchez la femme" is the war cry. As authority for her statements, the author claims her experience during some sixty years of her life as wife, mother and, perhaps, grandmother.

A Collection of Neuropathological and Psychiatric Works Dedicated to Prof. I. A. Sikorski on the Occasion of the Completion of Thirty-five Years of His Medico-Scientific Career,—(1896-1904). By his students, Kushneriev, Kiev, 1904. A number of valuable papers on neurology and psychiatry covering 800 pages are collected in this volume. This conceit of honoring a Professor is delicate in sentiment as well as useful in substance.

Le Voriazione Dei Sulchi Cerebrali e la Loro Origine Segmentale Nell'Hylobates.—DR. SERGIO SERGI: The first part of the monograph treats of the comparative and critical analysis of the cerebral sulci in the individual and species of the genus Hylobates. The second part is devoted to the consideration of the segmentary origin of the cerebral sulci and their variation in the individual and species. Illustrations accompany the study (*Laboratorio di anatomia normale, R. Università, Roma, Vol. X, fasc. 3, 1904*).

Tuberculosis as a Disease of the Masses, and How to Combat It.—DR. S. A. KNOFF. Firestack, New York. This essay won the prize offered by the *International Congress to Combat Tuberculosis as a Disease of the Masses*. Its main merits are conciseness, practicability and applicability. The world seems to have appreciated these traits: the essay has been translated into every living language. Every one interested in the fight against the "white plague" will find this essay of interest.

Criminalité de L'Enfance. — RENÉ LE MARC'HADOUR. Thèse, Rennes, 1903. The causes of criminality are considered from various points of view, and the social struggle against criminality is examined. Special consideration is devoted to the question of mentally and morally invalid parents in relation to their offspring. Technical reforms are suggested for France.

Des Aliénés Criminels et Des Crimnells Alienés.—MARCEL VERIN. Thèse, Rennes, 1904. The author considers the classification of the criminal insane and the insane criminal, and their responsibility before the law and community. The question of special hospitals or establishments for these subjects is analyzed.

THE JOURNAL OF MENTAL PATHOLOGY.

VOL. VII.

1905.

No. 2.

THE DEGENERATE EAR. ANATOMO-ANTHROPOLOGICAL SKETCH.

BY DR. V. V. VOROBIEFF, *Moscow.*

The study of the "degenerate ear" was started at about the same time as that of psychical and physical degeneracy. Morel (1), among others, mentioned, among other peculiarities of physical signs of the degenerate, the anatomical anomalies of the ear shell. He himself did not enter into any detail on the subject, but simply remarked that the structural anomalies of the ear could be divided into three groups:

1. Abnormal implantation.
2. Hypertrophy or atrophy of the various parts of the ear shell.
3. Rudimentary union of the individual parts of the external ear and even absence of those parts (helix, anti-helix, anti-tragus, etc.).

In 1859, soon after the publication of Morel's papers on the subject, Stahl (2) published a paper on the anomalies of the individual parts of the ear shell. Legrand du Saule (3) was the first psychiatrist to devote some pages to the subject in question in his textbook on psychiatry. He then indicated the imperfect development of the helix and other parts of the external ear as being stigmata of degeneracy. Then followed Griesinger and a number of other German, French and Russian authors—all devoting some space in their textbooks to the consideration of the "degenerate ear." Most of the authors simply repeated one another's statements, indicating as signs of degeneracy an adhering or undeveloped ear-lobule, an undeveloped helix, prominent anti-

helix (Wildermuth's sign) (4). Later were pointed out the standing out ear (Lombroso's sign) (5), Darwin's ear (Gradenigo) (6), etc.

It is well to remark that the authors in question did not show any critical analyses regarding the matter in hand, remaining content to borrow one another's opinions as alluded to above. Otherwise it would be difficult to explain the fact that in the textbooks of these authors adherence of the pinna, for instance, should be indicated as a positive sign of degeneracy, whereas no independent study of the comparative frequency of this defect, among the sane and insane respectively, is presented by any of them. Even the most enthusiastic advocate of the "degenerate ear," Binder (8), has not presented any study of this subject. According to him, psychiatrists found some 30 per cent. or more of adherent lobules among the insane.

Beginning with Lombroso's teaching and that of his followers, the Darwin ear and other anomalous forms, especially the protruding ear, is frequently found among criminals. The percentages of the various anomalies vary with the authors. The percentages of the standing out ear are given as follows: Lombroso, 28 per cent. of his cases (394 cases); Marro, 7.7 per cent. (529 cases); Penta, 3.5 per cent. (400); De Sarlo, 5 per cent. (80); Stura and Arese, 16 per cent. (19 cases); Gradenigo, 25.2 per cent. (200), etc.

Neither the authors cited above nor those as yet to be cited give their studies of the ears of normal people. Consequently, the conclusions as regards the "degenerate ear" among the insane and degenerate respectively must be accepted on the basis of faith only.

In 1886, Féré and Séglas (9) presented a more acceptable statistical study of some particular forms of ears of the insane and criminals, but they made no attempt to describe the "degenerate ear." Wildermuth's (4) work appeared at about the same time, treating of some peculiarities of the ears of idiots and epileptics, in whom the anti-helix is unusually prominent. Binder termed this form *Wildermuth's ear*. Rohrer's work (10) belongs to the same period, his last work (11) dating from 1897. Lannois's work (12) came out in 1887 and his last work (13) in 1892. In this last work he is full of skepticism regarding the teaching of the "degenerate ear" of the criminal as described by Lombroso and his pupils. He presents comparative studies of healthy people and criminals. Unfortunately, Lannois himself makes the comparison between Italian criminals and French normal inhabitants, ignoring the possible influences of race on the

particular structure of some of the ear. That race has an influence on the structure of the ear is demonstrated by Topinard (14),—putting together the facts brought to light by Schwalbe (15), Karutz (16, 17) and myself (18).

In 1888, Frigero's work (19) appeared. He limits himself to describing some particularities, leaving a rather vague notion as to what forms of the ear should be grouped as "degenerate." Nevertheless, his work is interesting because, as an ardent follower of Lombroso's School, he was the first to introduce into the study of the "degenerate ear" embryologic data and those of comparative anatomy. The ears studied were those of children, adults (soldiers), insane, criminals of various classes and, finally, those of ten monkeys (no mention is made of the varieties). Frigerio was also the first to draw attention to the ear measurements in addition to their general description. At about the same time appeared the work of an ear specialist familiar with the anatomy and embryology of the ear—Gradenigo (20). His first paper dealt with the normal external ear and the subsequent papers were devoted to statistical data regarding the morphology of the external ear especially of insane men and women. In this comparative study he indicates what, according to him, should be considered a "degenerate ear." His is the first work in which an attempt is made to present a general and at the same time complete analysis of the question; besides, it has the merit of being the most methodic research into the question. In 1889 appeared Binder's extensive work *Das Morel'sche Ohr*,—full of errors of method, but interesting nevertheless because an attempt is made in it to classify all forms of the "degenerate ear" (Morel's). It seems that he was not familiar with Gradenigo's work. Not being familiar either with the embryology or the anatomy of the external ear, however, Binder made up an artificial classification that resulted in an irregular and arbitrary placing of similar genetic forms in different groups. In 1889, also appeared Julia's (21) witty and well founded criticism of Binder's work. Julia pointed out that it was not reasonable to compare the ears of old criminals or of insane with those of normal young men (soldiers), and drew attention to the inadequacy that characterized the study of the ears of normal people, and the lack of uniformity of method with which the individual forms of ears had been studied by various authors. He objects especially to the teaching of the atavistic variety of the "degenerate ear," some of which present simply arrested development, while others, on the contrary, present an excessive development of the helix (*helix bandiformis*), prominent anti-helix, etc. He also pointed out that there

existed racial as well as caste forms of ears. That even the mode of wearing one's head-gear had an influence on the form of the ears, some compressing them and thus changing their shape. In children the shape of the ears also depends greatly on the mode of feeding (lying on the side, etc.). He thus leads to the conclusion that even when a comparison of the ears of criminals, insane and healthy people is made, the results are not quite positive and it is a matter of doubt whether the anomalies found are stigmata of degeneracy or curious forms of development due to various conditions as alluded to above.

Julia was not the only skeptic on the subject. Later investigators founded their criticism on facts studied and ferreted out by themselves. Lannois was one of these, as was mentioned above. Then, there was Ganter (22); on the basis of his personal investigations he could not justify the denomination of "degenerate ears" because, he said, the study of the ear had not been made properly in normal man. Næcke (23) is also skeptical regarding the peculiar ear structure of criminals and insane. He thinks, with Sommer, that the only conditions of the ear that should be designated as degenerate are those causing functional impairment. Schaeffer (24) and especially Schwalbe (25-29) brought to light the invalidity of the teaching of the "degenerate ear." Schaeffer does not touch on the subject of the degenerate ear: he simply makes a study of ears of the normal German population and finds various percentages of embryonic non-development, varying with the geographical position of the countries in which the population was studied. These percentages vary between 25 per cent. and 60 per cent. And the embryonic defects pointed out by him in the normal population quite correspond to the "degenerate" forms of various authors. It is interesting to note that the most ardent adepts of the "degeneracy" theory also give from 25 per cent. to 60 per cent. of degenerate ears among the insane—the same percentage of embryonic defects of the ears that Schaeffer (30) found among the normal adult German population. Analyzing some of the forms of the "degenerate ear," Schwalbe points out that Darwin's ear is so common that it cannot properly be called an anomalous ear. He further points out that in man the embryonic development of the ear is characterized by a process of reduction (reduction of the pointed ear common to many animals). This reduction is also characteristic of the development of the ears in monkeys. The degree of reduction, however, is not proportionate to the height of development of beings, for the reduction is most marked in the orang-outang. From this may also be drawn the conclusion that an undeveloped

ear in man does not at all indicate an atavistic condition of its owner.

Recently Karutza's work (16) appeared dealing with the racial forms of the ear, also giving personal observations of ear forms of normal and insane Germans. He concludes by stating that a review of the works on the subject fails to convince that the ear called degenerate is more prevalent among criminals and insane than among normal subjects. Anatomico-anthropologic and psychiatric study of the "degenerate ear" leads me also to similar conclusions. I have had occasion to express my views *in extenso* in my monograph entitled *The External Ear of Man*, Moscow, 1901.

In my study of normal people there were 325 adults, laborers of the Moscow factories, 100 women factory workers,—all born in Riaziansk, 80 boys and 80 girls between 6 months and 16 years of age, born in the Department of Moscow; 100 insane born in the same Department. All the subjects were of the peasant class. Finally, I included in my studies 75 Kalmucks (Mongolians), living on the Volga, near Astrakhan. I was guided in my researches by Schwalbe's schema (28) that had just appeared at that time (1895), indicating how to study the ear shell.

My conclusions from the main works on the subject and from my own observations are the following:

The ear shell of man undergoes marked changes as age advances: the changes apply not only to the size but also to the form of its individual parts. The changes of the individual parts tend to a reduction of the embryonic form (changes designated as degenerative by most psychiatrists) that are most marked in children and least marked in the old.

There are positive data regarding racial variations of form of the ear. These data are as yet not sufficiently studied, and we are not enabled by them to establish even a general ethnologic grouping according to the appearances of the ear shells. Nevertheless, some of the variations of the forms of the ears indicate their dependence on racial groups; many anthropologists, psychiatrists and criminologists have declared ears to belong to the "degenerate" group when their forms differed from those they had individually chosen as normal forms. Thus, the authors declare the ear to be "degenerate" when the helix is undeveloped, when the ear corresponds to Darwin's ear, when the lobule is adherent, especially when the lobule is long and triangular, forming an acute angle with the cheek (group I according to Schwalbe's schema, etc.).

In the table below are given the main traits of the ear in three main branches of man.

Description of ear.	Negro ear.	European ear.	Mongolian ear.
1. Length.	Small.	Medium size.	Large.
2. Physio - pathologic index: relation of breadth to length.	Large (broad ear).	Medium.	Small (narrow ear).
3. Darwin's ear.	Comparatively rare.	Often marked variations for different groups.	Rare.
4. Helix.	Well developed.	Underdeveloped as compared with the negro.	Well developed.
5. Lobule.	Less adherent than in other races.	Adherent lobules frequently met with. Simple adherence predominates.	Adherence is characteristic, Group I. of Schwalbe: long, narrow lobule, joining the face at an acute angle.

Speaking of the "degenerate ear," Karutz says that he knows of no study of ears of criminals and insane that is free from errors of method.

The erroneous views regarding the "degenerate ear" as pointed out by a few authors, Julia and myself are as follows:

1. Lack of comparison between pathologic and normal groups and the purely theoretic assertion that given peculiarities of the ear do not exist in normal subjects (this is particularly applicable to Binder's statements).

2. The racial peculiarities of structure are neglected when comparing groups of subjects. Social and economic differences are also neglected. Finally, the ages of the subjects are not taken into consideration. In order to demonstrate the influence of age, I present below data regarding the length of ears of normal and insane Russians of the North (Velikorussy), according to my special investigations:

The average length of an ear of a normal Northern Russian is 61.4 mm., while that of an insane subject is somewhat longer,—63.1 mm.

The measurements of the ears according to the ages of Russians (Velikorussy) are given in the table below:

YEARS.	NORMAL.	INSANE.
From 26 to 30.....	61.1mm.	61.6mm.
From 31 to 35.....	62.0mm.	61.8mm.
From 36 to 40.....	63.1mm.	63.5mm.
From 41 to 45.....	63.3mm.	63.5mm.
From 46 to 60.....	63.4mm.	63.5mm.

Thus it appears that there is no difference in length when considered from the latter point of view. If the average is somewhat more marked for the insane, it is simply because the latter happened to be of higher stature.

3. Comparatively unusual ear forms are counted as being "degenerate"; it goes without saying that such conclusions are erroneous.

4. Almost all the authors who have published comparative studies of ears in normal and insane subjects respectively have followed a method that I should call a method of preconceived anomalies; almost every author in question seems to base his ideas on previously published literature on the subject. As our knowledge of the normal ear is most meagre, however, nothing warrants our conclusions that this or that form of the ear is a stigma of degeneracy. We should certainly look first for variation of form according to race, individual age, etc., otherwise the term "degenerate ear" loses its meaning. In the study of the ear it is essential to first become familiar with the form of the normal ear.

5. No importance is attached to the insignificance of size as explained above, whereas considerable importance is attached to differences between particular parts of the ear as found among different populations. These differences may, under normal conditions, vary even with similar ethnic groups. And these differences are generally far more marked than are those pointed out by authors when comparing forms of ears among normal and insane populations.

For the purpose of clearness, I take the liberty of presenting some of the distinctive traits pointed out by various authors as particular stigmata of degeneracy. I wish to remark at the outset that Schaeffer, while searching for other data than those regarding the "degenerate" ear, came across distinct variations in his findings among normal populations. His neutral attitude is a guarantee in itself of his unbiased mind on the subject. He found that the percentage of adherent lobules or those joining the face at an acute angle, varied in Germany according to the population—between 20 and 36 per cent.—a difference of 16 per cent. in some cases; whereas this difference between the Italian normal and insane populations is only 4.5 per cent. (Gradenigo: normal, 5.2 per cent.; criminal, 7.6 per cent.; insane, 9.7 per cent.) Vali gives the following figures for Magyars: normal, 5.6 per cent.; insane, 13.6 per cent.—a difference of 8.0 per cent., etc.

Schaeffer found the following data regarding the non-development of the helix among various German populations:

Bonn, 5.9 per cent.	North Baden, 13.0 per cent.
Reiningen, 11.0 per cent.	Middle Rhine, 15.0 per cent.
Schwabia, 11.0 per cent.	South Baden, 36.0 per cent.
Gessen, 11.5 per cent.	

In South Baden there were only 50 cases studied, while a much larger number was chosen for the other groups.

In face of the above quoted differences in percentages among normal populations, the comparative percentages obtained between normal and insane populations lose all their significance. Thus, Zerni (Zurich) gives for the normal population 1 per cent.; for the epileptic, 3 per cent.; for the normal, 0.8 per cent.; for the insane, 3.8 per cent.; and for the criminals, 4.0 per cent. Vali (Buda-Pest), normal, 3.2 per cent.; insane, 9.7 per cent.

For the German groups mentioned above, Schaeffer finds Darwin's ear for the normal population between 13 per cent. and 47 per cent., and by excluding the South-Baden group, that is a small one,—between 13 per cent. and 30 per cent., whereas the difference of percentage between the normal and pathologic populations is much less marked, as seen below.

AUTHORS.		DARWIN'S EAR.	
Zaubi (Zurich),	normal,	3.0 %, pathologic,	4.4%.
		idiots,	6.0%.
Næcke (Germany),	normal,	1.25%, insane,	11.0%.(*)
Gradenigo (Italy),	normal,	3.5 %, criminal,	3.3%.
Féré and Séglas			
(France),	normal,	2.4 %, insane,	4.1%.
Vali (Buda-Pest),	normal,	3.0 %, criminal,	4.5%.
		insane,	6.4%.

Analogous figures could be presented as regards other peculiarities of the ear. Unfortunately, the number of observations is not sufficient or else the authors have a tendency to exaggerate their data. Such a tendency is evident in Binder's case, for instance (Das Morelsche Ohr); speaking of the peculiarity of the ear structure among the insane, he says that the peculiarity is so marked that one hardly ever finds it among normal people one meets on the street, in cars, in trains, etc. Yet, as we have seen, Schaeffer, Schwalbe and others, who also made their studies among Germans, and in some instances, perhaps among the same German populations that Binder had studied, or looked at in the streets, etc., readily found some of Binder's signs to the extent of 40.0 per cent.

Limiting myself to the consideration of the adherent lobule,

* Although the difference is quite marked, Næcke himself does not attach to it any importance.

Darwin's ear and undeveloped helix,—all of which have been studied in normal populations, and that are most readily called by psychiatrists stigmata of degeneracy, I shall point out the following facts: among normal populations these anomalies are quite as prevalent as they are among the insane or criminals. Among normal populations a marked difference of percentages is found not only between different groups, but also within the limits of the same groups. Schaeffer's figures in this respect were shown above. The figures below are those obtained by various authors:

NATIONALITY.	AUTHORS.	ADHERENT LOBULE.		
		Group I, according to Schwalbe. Adherence at an acute angle. Per cent.	Group II, simple ad- herence. Per cent.	Groups I + II. Per cent.
France.	Lannois.	5.6	10.8	16.4
France.	Féré and Séglas.	5.5	18.7	24.2
Italy.	Gradenigo.	5.2	21.3	26.5
Germany.	Karutz.	2.0	23.3	25.3
Germany.	Schaeffer.	—	—	20.36
Russia (Velikorussy).	Vorobieff.	13.7	21.7	35.4
Russia (Kalmucks).	Vorobieff.	50.9	5.3	56.2
NATIONALITY.	AUTHORS.	Maldevelopment of the helix.		
French.	Féré and Séglas.	5.5%		
French.	Lannois,	8.0%		
Italians.	Gradenigo,	0.8 (among women, 7.3%).		
Magyars.	Vali,	3.2%		
Germans.	Naecke,	10.0%		
Germans.	Karutz,	13.9%		
Germans.	Schaeffer,	5.9 to 36.0% (by exclusion of this as not sufficiently nu- merous—5.9% to 15.0%).		
Russia (Velikorussy).	Vorobieff,	7.5% (of less marked forms there are 40%).		
Kalmucks.	Vorobieff,	14.3% (less marked forms— 12.5% and more).		

I do not cite corresponding data for the insane. Vali (Buda-Pest) found the most striking differences in this respect between normal and pathologic populations, as shown below:

Normal, 3.2 per cent.; idiots, 86.0 per cent.; insane, 9.7 per cent. These differences are less marked according to others. But even Vali's marked differences lose their absolute significance

when compared with Schaeffer's data obtained among similar populations.

Country or Nation.	AUTHORS.	DARWIN'S EAR.
		Per cent. of marked forms.
Magyars.	Vali,	3.0
Italians.	Gradenigo,	3.5
Kalmucks.	Vorobieff,	3.7
French.	Féré and Séglas,	2.4
French.	Lannois,	14.0
Russia. (Velikorussy).	Vorobieff	13.5
Germany. (Elsace and provinces along the Rhine).	Schwalbe,	30.7
Upper Elsave.	Schwalbe,	36.0

Here we see again that there is no absolute standard for normal populations.

I shall now present my personal comparative studies of the ears of normal and insane Russians (Velikorussy). In these studies I am guided by Schwalbe's schema that is quite complete and definite in its groupings. I shall present my comparative data *in extenso* only as regards the traits that have been considered by authors as stigmata of degeneracy.

In Schwalbe's schema the main traits of the ear are classified in three groups: group I—underdeveloped ear; group II—badly developed, ear and group III—markedly degenerate ear.

	RUSSIANS (VELIKORUSSY).	
	Normal. Per Cent.	Insane. Per Cent.
Darwin's ear, group I-II,	13.5	18.0
Helix markedly underdeveloped,	7.4	13.0
Helix not sufficiently developed,	40.6	35.5
Helix completely developed,	52.0	51.5
Anti-helix protruding outwards (Wildermuth's ear),	30.1	23.0
Adherent lobule, group I (acute angle),	13.7	20.5
Adherent lobule, group II, (simple adherence),	21.7	20.0
Standing out ear,	10.4	35.0

From the above table it is seen that the peculiarities generally accepted as stigmata of the degenerate are also quite marked among normal people. The percentage of subjects who are free from the stigmata here considered is 23.5 per cent. among the normal and 22.0 per cent. among the insane. In other words,

there is no difference in this respect between the normal and the insane Russian populations (Velikorussy). As regards the particular differences that do exist when comparing the ears of the normal and insane of this population—they are too small to be of any significance. Thus, for instance, among the insane (Velikorussy) Darwin's ear occurs 4.5 per cent. more frequently than among the normal subjects. As the same ear is found to the extent of 13.5 per cent. among normal subjects, however, the difference may be explained by some defect in the method of comparison.

Nor is there any difference in degree of development of the helix as compared between the normal and insane Russians (Velikorussy). It is true that the percentage of markedly underdeveloped helixes among the insane is almost double that among normal subjects (13.0 per cent. for the insane, 7.4 per cent. for normal subjects). The difference between the two forms of the helix, however (markedly underdeveloped and not sufficiently developed) is not distinctly indicated. It is possible, therefore, that in the case of the insane, when some doubt arises as to the grouping of the form, preference is given to the more imperfect group, while in that of normal subjects the anomaly is grouped preferably as not sufficiently developed. It is far easier to draw conclusions from the percentages of the completely developed ear of the normal and insane populations respectively. In this case there is no difference to speak of (insane—51.5 per cent. normal—52.0 per cent.).

The difference is somewhat more evident as regards the adherent lobule (Schwalbe's group I, joining the cheek at an acute angle) (*). For normal subjects we have 13.7 per cent. and for the insane 20.5 per cent. But even here, the difference is not so very marked.

The percentages regarding the standing out ear (Wildermuth's ear) are quite reversed: 30.1 per cent. for normal subjects and 23.0 per cent. for the insane. I do not feel inclined to conclude from these figures that the degenerate (Wildermuth's) ear occurs more frequently among normal than among insane subjects. It is most probable that this form of ear is equally frequent in both populations. The only conclusions that can be drawn from this is that the form in question is not as rare as one may be led to suppose.

Among the Russians (Velikorussy) the relative proportions of

* Simple adherence (Schwalbe's group I.) appears in similar percentages for normal (21.7 per cent.) and insane (20 per cent.) subjects respectively.

the standing out ears are quite striking: 10.4 per cent. for the normal and 35.0 per cent. for the insane population.

Schwalbe considers the ear as "standing out" when its posterior surface forms with the skull an angle of 90 degrees. Even under these precise conditions flagrant mistakes are possible: when applying an instrument between the ear and the skull for measuring the angle, it is quite easy to be misled by insane patients' statements while taking the measurement and thus increase the angle more than it is. However, the difference is so striking that it should not be ascribed entirely to this possible condition. It is more likely than not that the difference exists in reality. It may be remarked in this connection that Lombroso and his followers consider the standing out ear as one of the most characteristic head features of criminals. It is possible that the junction of the ears at right angles in the insane and criminals is a stigma of atavism (see, for instance, the angle of junction of the ears in the majority of animals) or else it may be due to the persistence of embryologic forms. Standing out ears are frequently found in rachitic subjects, particularly in those having begun to walk late or having, during childhood, spent a good part of the time in bed. Under those conditions, it is not so much the actual ear that is standing out as the corresponding part of the skull that is flattened.

There can be no doubt that criminals and a large number of insane live in conditions of poverty and privation. It may be supposed, therefore, that rickets play an important part in the changes of the ear shell of the insane through weakness during infancy. To my regret, it did not occur to me in proper time to look for signs of rickets in the subjects I had studied.

The history of the embryonic development of the ear shows that almost all the forms corresponding to the so-called "degenerate" varieties are met with at some or other stage of development. Darwin's ear in its various forms, for instance, may be seen in the normal fetus of from 5 to 7 months of age, then the tubercles undergo a process of reduction, leaving, nevertheless, traces in a considerable number of adults. Adherence of the lobule is also of embryonic origin, the detachment commencing between the fifth and sixth months of fetal life. At about the same time or somewhat later begins the curving of the helix in its lower part (in its upper part the process begins at the end of the third month of fetal life), etc.

This "degenerate" form of the ear represents various degrees of arrest of development. Hence the question arises,—does not degeneracy of the ear indicate that there is a tendency to degeneracy of the body in general and of the nervous system in particu-

lar? The idea is seductive in its theoretical meaning. Yet existing facts do not speak in its favor. Schaeffer's researches into the frequency of persistence of embryonic imperfections of the ear in adults show that the imperfections are found in from 65 per cent. to 75 per cent. of normal subjects. His researches cover several thousand normal subjects. It is noteworthy that among the insane some psychiatrists found the various embryonic imperfections of the ear to the extent of from 60 per cent. to 65 per cent. This percentage is even somewhat smaller than is that obtained by Schaeffer among normal subjects. This may be explained by the fact that Schaeffer studied the embryonic conditions, leaving aside the question of the degenerate ear; and while doing so, he possibly took for embryonic forms certain varieties not considered by the majority of psychiatrists as degenerate. Thus, for instance, a conic form of the tragus (its normal shape is quadrilateral) is not considered as a stigma of degeneracy, although Frigerio does consider it as such. The so-called satyr ear is another form that is taken into consideration by the embryologist, but is not considered by the psychiatrist (see Schwalbe, Schaeffer and my own paper on the outer ear). This may also increase the number of the embryonic forms ascribed to normal populations as compared with degenerate forms ascribed to degenerate populations.

Considering that it was difficult to obtain uniform results when the methods of investigation were so diverse, I undertook to follow as uniform a method as possible in my studies, choosing both normal and pathologic groups as nearly similar as possible as regards nationality, social standing, birth and occupation. The subjects were Russians (Velikorussy). I found that perfectly normal and well developed ears (among men) were found only in 23.5 per cent. of the normal subjects. The corresponding percentage among the insane is about the same—22.0 per cent. These figures indicate that the embryonic forms of the ear are quite prevalent in the adult, and these forms cannot be said to have any significance as regards the degeneracy of the subjects.

It should be concluded, therefore, that the outer ear in man is a rudimentary organ and has no particular significance (see Schwalbe) (*) in his functional life. The ear steadily undergoes a process of reduction that is not quite complete in many cases; the external ear being almost a useless organ in man, nature seems to neglect its process of development.

* Schwalbe and others show that more or less pointed ears are found in animals in which the sense of hearing is highly developed. Further studies show that a reversal of the process of evolution of the ear characterizes the ears nearing in shape those of man—the process being that of reduction.

From the figures cited above it is seen that the process of reduction is sometimes quite imperfect. The signs of underdevelopment are particularly evident when examining specific parts of the ear (imperfect reduction). Thus, in normal subjects (Velikorussy) one trait of underdevelopment of the ear is found in 225 cases; two in 151 cases; three in 91 cases; four in 19 cases; five in 9 cases, and even six in 3 cases.

I class all the groups as follows:

1. With one trait of underdevelopment—transition group of ears.
2. With two traits of underdevelopment—underdeveloped ear.
3. With three or more traits—markedly underdeveloped ear.

Comparing the frequency of these forms among the normal and insane subjects respectively (Velikorussy), I found the following results:

	NORMAL. Per Cent.	INSANE. Per Cent.
Group of perfectly developed ears.....	23.5	22.0
Transition group	34.6	36.5
Underdeveloped	23.2	23.5
Markedly underdeveloped	18.7	18.0

The above data show how prevalent the embryonic form of ears is among normal subjects and the absence of difference between the similar percentages among the insane. It follows, therefore, that the embryonic forms of ears, described by psychiatrists as "degenerate" ears, have no significance as stigmata of degeneracy.

To further argue the matter on the basis of material personally studied, I suppose, for the sake of argument, that the embryonic forms of ears indicate that their owners are degenerate. Then it must be concluded that a large number of normal Russians (Velikorussy) are degenerate to a marked extent. But Schaeffer's, Schwalbe's and others' figures also show a large percentage of embryonic ears among the normal German populations. Therefore, such a conclusion cannot be correct.

To be still more precise in the matter, I reasoned thus: if the usual traits of the ear (underdeveloped helix, standing out anti-helix, Darwin's ear, adherent lobule, etc.) are to be accepted as stigmata of degeneracy, then subjects with such ears should present other stigmata of degeneracy as well. In other words, I reasoned that I should have no difficulty in finding concentration, so to speak, of stigmata of degeneracy in subjects said to be degenerate because of certain forms of their ears. I therefore chose normal and insane subjects (Velikorussy) who had anomalies of

their teeth as regards development and implantation. I then expected to find every subject with such defective teeth to also present the so-called "degenerate" forms of the ears. Among the subjects thus chosen I could find no difference whatsoever between the shapes of the ears of normal and insane respectively—as compared with ears of subjects with normal teeth. For want of space I do not present the detailed statistical data relating to this side of the question.

From all that has been said here it does not follow that the ear never presents any characteristics of degeneracy. I mentioned above the standing out ear and its relation to degeneracy. Apparently there exist some more characteristic traits frequently met with among the insane pointing towards degeneracy, but those traits have not been clearly described in psychiatry. As I have already remarked, the majority of the traits designated as stigmata of degeneracy are simply of embryonic origin. Alongside with these traits, however, there exist also true anomalies,—atypical traits, that are difficult to accurately describe. Some of these are fissures and colobomata of the lobule and other parts of the ear, abnormal formations on the ear in the form of tubercles, warts, etc., often representing rudimentary additional outer ears. In some rare cases, the entire ear shell is absent, being replaced by some undifferentiated warts. To this class of anomalies also belong those in which only specific parts of the ear are thus disfigured. Such are—flattening, indentations under various angles of the borders of the helix and anti-helix, as if cut out, etc. Such traits are distinctly monstrous malformations, although they do not impress us as such at first sight. In my personal studies of normal Russians (Velikorussy) I have only 9% of my cases with such malformations. This percentage is small, and it is possible that a study of the population at large would show that such subjects are more or less distinctly degenerate psychically. Among the insane Russians (Velikorussy), however, the number of truly atypical cases is much higher—2.0%. I do not say that every degenerate subject has such anatomical anomalies of his ears. The reverse conclusion, however, I readily admit: all or almost all bearers of that kind of anomalies are subject more or less degenerate.

In conclusion I present below statistical tables showing the results of my personal studies of ears among normal and insane Russians (Velikorussy).

1. I wish to point out that the method was uniform for all the cases studied and I personally conducted the studies. Schwalbe's schema was used. As is known, he divides and subdivides the

various groups and forms so that one is enabled to make the finest possible classification.

2. I first studied insane and degenerate (Velikorussy), so that the data relating to them were obtained before I had obtained any definite knowledge of the structure of the ears of normal Russians (Velikorussy). This was an additional guarantee against the commission of subjective errors.

3. The normal and insane Russians (Velikorussy) were chosen from among similar groups by birth and social position. The subjects of all the groups were peasants from the central Department of Velikorussia, and had been in those regions for years. Besides, all the subjects chosen were born and brought up in the country at least until they were 16 to 18 years of age and their occupation was agriculture.

	NORMAL.	INSANE.
Darwin's ear, group I.....	0.3%	1.5%
“ “ group II	9.8%	12.0%
“ “ group III	3.4%	4.5%
“ “ group IV	5.5%	9.0%
“ “ group V	47.4%	35.0%
“ “ group VI	33.5%	38.0%
Helix <i>a</i> , its upper part.		
Group I	0.0%	2.0%
Group II	23.1%	12.0%
Group III	76.9%	86.0%
Helix <i>b</i> , its lower part.		
Group I	7.4%	13.0%
Group II	40.6%	35.5%
Group III	52.0%	51.5%
Anti-helix. Group I	11.3%	8.5%
Group II	58.5%	67.0%
Group III (Wildermuth's ear)	30.1%	23.0%
LOBULE:		
group I, gradual junction with cheek at an acute angle	13.7%	20.5%
group II, simple adherence.	21.7%	20.0%
group III, lobule somewhat distant from face.....	26.1%	27.5%
group IV, completely free..	38.4%	30.0%
Standing out ear:		
group I, flattened against the head	7.39%	9.0%
group II, average position.	82.1%	60.5%
group III, standing out ear.	10.4%	35.0%

	NORMAL.	INSANE.
Atypical conformation (coloboma, indentations, partial impairment of form of individual parts, warts, etc.)	9.0%	22.0%

I shall conclude as follows:

1. The majority of statistical data regarding the "degenerate" ear are founded on numerous and major errors of method; for this reason the findings of various authors differ from and are opposite to one another,—all being equally unreliable.

2. The measurements of the ears do not differ materially in normal and insane subjects respectively. It may be added, nevertheless, that in the insane and degenerate the general tonicity of the ear shell is relaxed, giving the ear somewhat exaggerated dimensions in length and in breadth.

3. The embryonic types of the ear are markedly prevalent among normal subjects. Among the insane and degenerate these forms prevail either to the same extent as among normal subjects or, if the proportion is somewhat higher, the difference is too small to be of any significance.

4. The standing out ear, on the contrary, is of significant meaning: although it may be found among normal subjects now and then, it is met with to a marked degree among the degenerate. It should be supposed, however, that in this case the structure of the ear alone is responsible for its characteristics: the structure of the skull may also contribute to its peculiar attitude.

5. There are peculiarities of the ear structure that are seldom found among normal subjects. These peculiarities have hardly been pointed out by other authors, if at all. These peculiarities are in no way characteristic and cannot be generalized as to their configuration. In a word,—they are true anomalies.

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ELECTROCUTION. AN EXPERIMENTAL STUDY
WITH AN ELECTRIC CURRENT OF LOW
TENSION. ILLUSTRATED WITH CAR-
DIOGRAPHIC AND RESPI-
RATORY TRACINGS.

WITH SOME CRITICAL REMARKS ON THE PRESENT
METHOD OF THE OFFICIAL ELECTROCUTION.

A PRELIMINARY COMMUNICATION.

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In this note is embodied one of a series of experiments presented at the *V-th International Congress of Psychology*, held in Rome, Italy, April 26-30, 1905. I wish to remark at the outset that the experimental electrocution of which I shall speak here is simply a detail of a study in which I am now engaged. I do not wish to convey the impression, however, that I endorse the idea of electrocution as applied to man. I disapprove of all forms of capital punishment. Those who are familiar with my views on the evolution of criminality and my suggestions as to its eradication (1) are also familiar with my views regarding capital punishment: capital crime never can and never will be eradicated by the infliction of capital punishment. Leaving this vexed question to itself for the present, however, I shall give here an exposition of the method I have employed in experimental electrocution. This method may serve to show how crude and horrible is the method of electrocution now applied in capital punishment in the State of New York.

In my experiment I have used the *Leduc* current. Professor Sthéphane Leduc, of Nantes, France, was the first to show its use and application in various ways. In my work I have used different interrupters, and shall make comments on their respective merits and demerits in due time. In the present experiment

I used Professor Leduc's interrupter as constructed by a French firm. The interrupted current is so regulated that it passes one-tenth of the entire time.

The animal, a rabbit, is fixed to a board and properly strapped, so that tracings may be taken without the interference that would otherwise be caused by the convulsive movements caused by the current.

The appliances for recording the cardiac beats and respirations are applied to the chest in the proper places and the cardiograph is set in motion. The cardiograph I have used is a special instrument invented by Professor Rouxau, of Nantes, for the especial purpose of obtaining tracings during any number of hours desired. Such tracings are especially valuable for recording the cardiac and respiratory curves during electric sleep, that is readily induced by the current here mentioned. In a future issue of this Journal I hope to describe the method of inducing electric sleep and show tracings taken uninterruptedly during electric sleep that lasted some $3\frac{1}{2}$ hours (*). For the present, I wish to mention the important points concerning experimental electrocution by means of the *Leduc* current.

1. The cathode should be applied to the forehead and the anode to the abdomen.

2. For a good sized rabbit, 14 volts constitute a lethal current. This number of volts is not absolute,—varying with the animal—not with its size.

3. From the series of experiments, of which the one presented here is a part, it is correct to conclude that the animal loses consciousness the instant the circuit is closed.

4. Consciousness is lost when only five volts, more or less, are turned on.

5. In experiments on "electric sleep" this number of volts, applied as described above, induces a condition that has every appearance of sleep. During the continuance of this condition sensibility is abolished and voluntary muscular motility is completely abolished.

6. In rabbits it is necessary to apply, for the purpose of electrocution, approximately $2\frac{1}{2}$ times as many volts as are necessary to induce "electric sleep."

7. Consciousness is lost when a lethal current is applied as indicated above.

8. There is neither edema nor blistering of the parts corre-

* Dr. Louise G. Robinovitch. Electric sleep demonstrated and respiratory and cardiac tracings during that sleep exhibited at the *V-th International Congress of Psychology*, held in Rome, Italy, April 26-30, 1905.

sponding to the places where the electrodes had been applied. In the instance of capital punishment by the present method of electrocution, on the contrary, there are both edema and blistering of those parts (2).

9. We do not know whether the subjects who suffer the penalty of death by electrocution, inflicted according to the method in vogue, retain consciousness during any period of time during the application of the lethal current (*).

10. Leaving aside the sentimental as well as the scientific side of the question of capital punishment, it seems to be our duty, on purely humane ground, to do away with any unnecessary physical suffering, of subjects paying the death penalty, because of the method of infliction of electrocution.

11. Pending the abolition of capital punishment in this country in general and of electrocution in the State of New York in particular, humane reasoning dictates our doing away with suffering of the condemned so far as it is in our power so to do. The first point to be attained is to ensure suspension of consciousness; the second is to make certain cardiac and respiratory paralysis. These conditions are readily realized in their desired order by the use of the current applied in this experiment. The entire process is obtained with a low voltage. In man, from 150 to 200 volts would probably suffice. With this number of volts and the mode of use and application of the current here indicated, there is obtained not only loss of consciousness, preceding cardiac and respiratory inhibition, but there is also avoided blistering, edema and burning of the parts corresponding to the places where the electrodes are applied.

12. In one of the records of electrocution in the State of New York (3) it appears that 1800 volts were used. In the case of Czolgosz, "1800 volts were maintained first for seven seconds, then reduced to 300 volts for twenty-three seconds, increased to 1800 volts for four seconds and again reduced to 300 volts for twenty-three seconds, the whole having lasted one minute."

13. In the published records of electrocutions it is evident that no significance is attached to the importance of the specific place on the head where the electrode should be applied. Nor is it indicated whether the anode or cathode was applied at the head. In Czolgosz's case it may be inferred that one of the electrodes had been applied at the occiput: "Corresponding to the attachment of the leg-electrode there was a superficial blistering, with some desquamation of the epidermis and some edema. At the

*I shall make some further remarks on this point in the notes appended to this paper.

site of application of the head-electrode there were only a few signs of vesication limited to the occiput" (4). In one of the cases published by Dr. MacDonald, the electrodes had been applied to the hands (*).

14. Putting aside the question of sentiment, it seems common humaneness to abandon the use of high voltages and the haphazard application of electrodes that leaves us in the dark regarding the possible agonizing sufferings of the subjects undergoing electrocution, since we do not know whether the general sensibility and consciousness are instantly abolished under the present crude methods of application. With the method of application used in this experiment, we have laboratory proof that sensibility and consciousness are both lost with a voltage amounting to only 40% of that necessary for lethal purposes. Respiratory and cardiac inhibition are then obtained synchronously with the loss of consciousness and of general sensibility. There is neither edema, blistering, nor burning of the tissues as consequences of the application of the current. As has already been remarked, in man it would probably be necessary to use between 150 and 200 volts for lethal purposes.

EXPLANATION OF THE TRACINGS.

The uppermost tracings presented herewith represent the respiratory curves; the lower represent the cardiac beats that are somewhat masked by the respiratory movements; the third and lowest tracings indicate the time: one double oscillation equals 2 seconds.

The closing of the circuit (12 volts, 2 and 2-3 milliampères and passage of the current one-tenth of the time) causes, with a deep inspiratory movement, complete respiratory inhibition, while the cardiac beats persist—although they are quite feeble. It appears that as the current is continued, the amplitude of the cardiac beats augments; the character of the tracings is accentuated with every renewal of the experiment.

In my experiment the current was applied the first time for a period of ten seconds; the second time, for twenty-seven seconds, and the third time for twenty-three seconds. The periods are separated by pauses of several minutes (**). The fourth renewal of inhibition was caused with 14 volts, 3 milliampères, same number of interruptions, and was maintained during a period of 32 seconds—causing death.

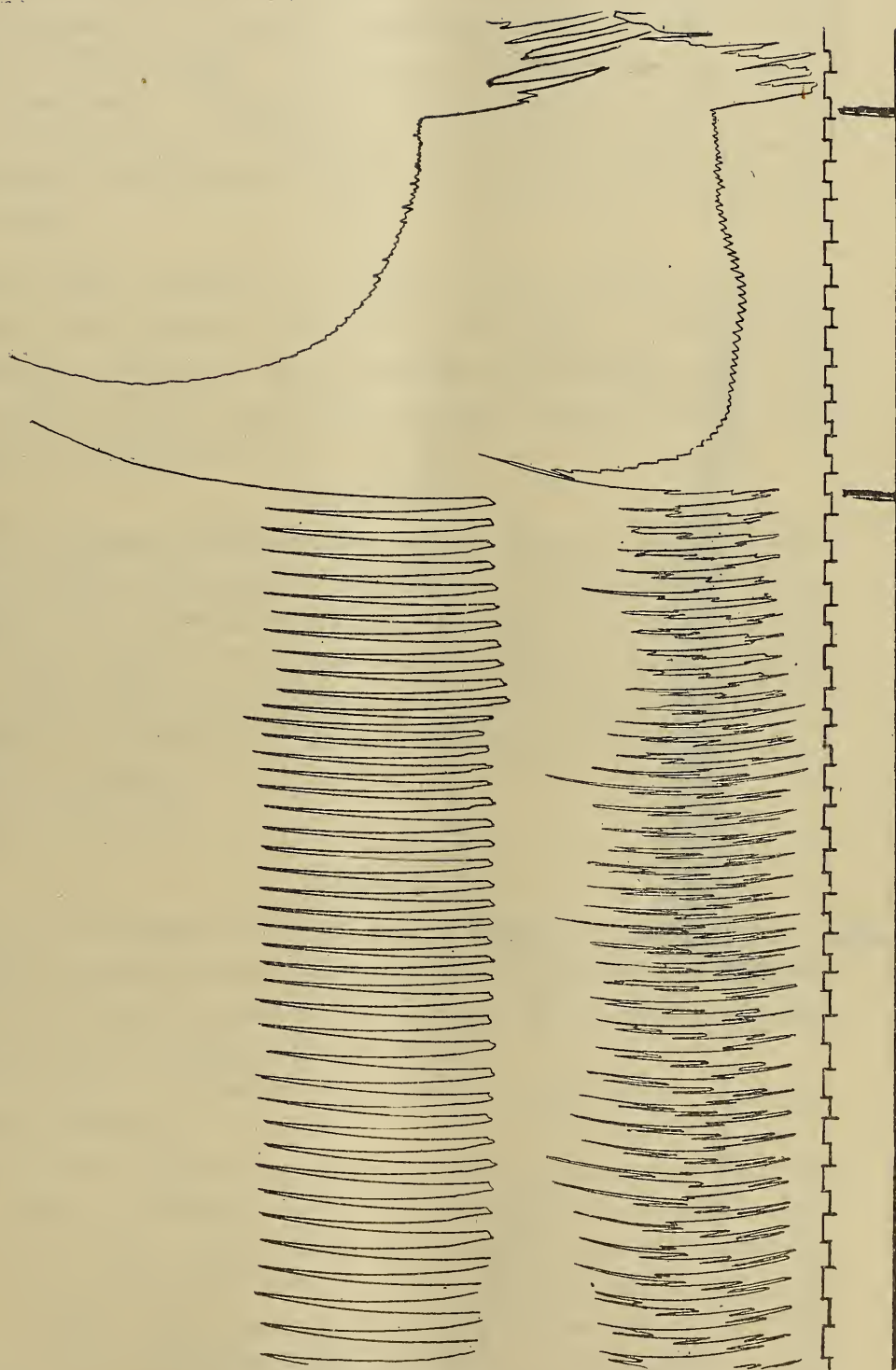
On opening the circuit, a violent and profound expiratory

* See extracts in the appended notes.

** Portions only of the tracings are published with this paper.

DR. ROBINOVITCH.—THE JOURNAL OF MENTAL PATHOLOGY, Vol. VII, No. 2.

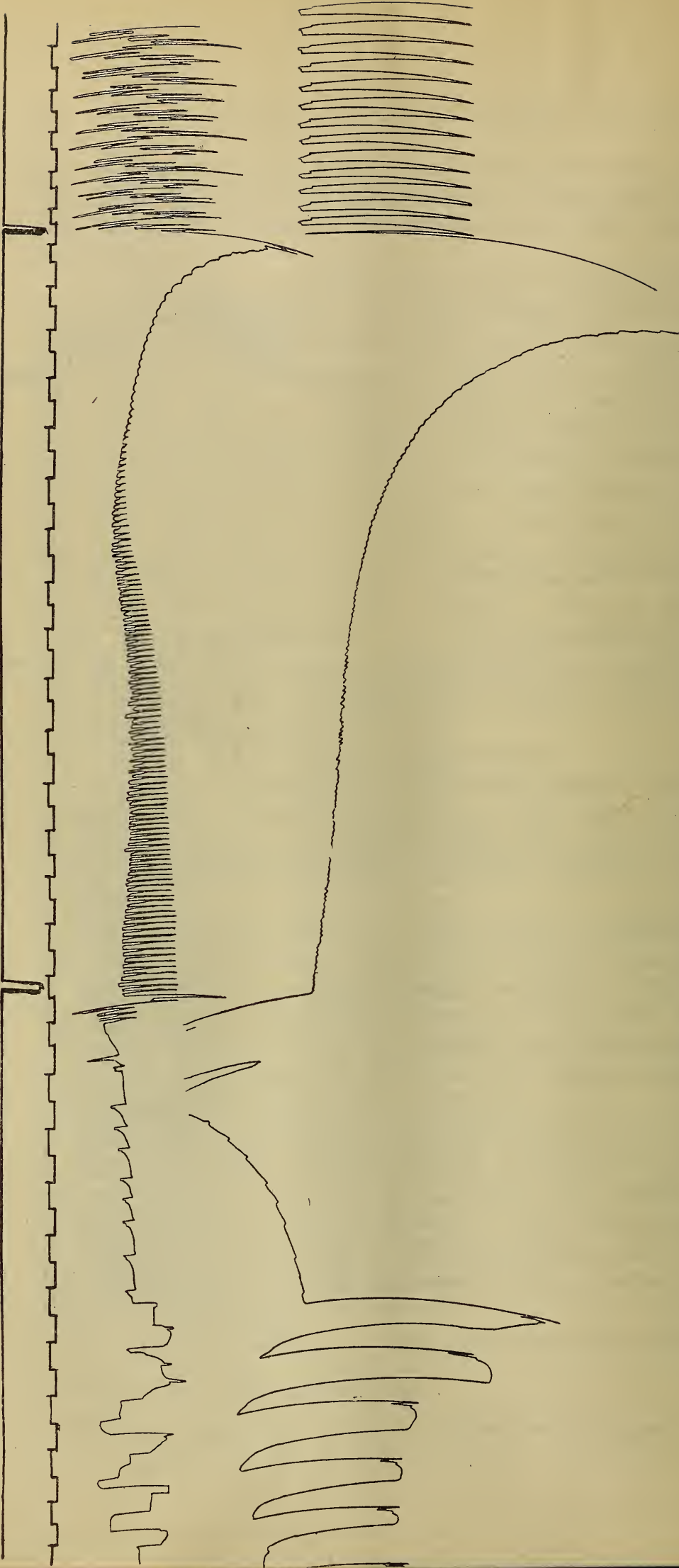
From the Physiological Laboratory, School of Medicine, Nantes.



CLOSURE,—12 VOLTS.

(Continued on next page.)

DR. ROBINOVITCH.—THE JOURNAL OF MENTAL PATHOLOGY, VOL. VII, No. 2.
From the Physiological Laboratory, School of Medicine, Nantes.



LETHAL CURRENT,—14 VOLTS.

RHYTHMIC CLOSURES AFTER DEATH,—14 VOLTS.

movement occurred, as usual, but normal respiration did not return. The cardiac beats were immediately modified in a characteristic manner, but the normal cardiac movements did not reappear, neither did the respiratory movements.

An animal thus electrocuted may sometimes be resuscitated by the application of rhythmic excitations with the same current that had caused death. This mode of resuscitation was tried in this experiment. The duration of the current at each rhythmic period is seen from the tracings. In this case resuscitation was impossible: the lethal current had been applied too long a time,—32 seconds.

I am deeply indebted to Professor Leduc and Professor Roux-eau for their generous assistance in this work. Their presence during the experiments and the taking of the tracings was a great help, and I take this opportunity to again express to both of them my sincerest thanks for their kindness.

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1. Dr. Louise G. Robinovitch. On the Duty of the State in the Matter of the Prevention of the Birth of Crime and of its Propagation. *The Journal of Mental Pathology*, Vol. I, No. 3, 1901.
2. Drs. Carlos F. MacDonald and Edward Anthony Spitzka. The Trial, Execution, Autopsy and Mental Status of Leon F. Czolgosz. *The Journal of Mental Pathology*, Vol. I, Nos. 4-5.
3. *L. c.*, p. 185.
4. *L. c.*, p. 195.

REMARKS.

As to the method of electrocution applied in the infliction of the death penalty in the State of New York,—in the appended notes the reader can pick out for himself the various paragraphs showing the following points of interest:

1. No rule is followed regarding the application of the respective electrodes.
2. We are supposed to take on faith the statement that "life was extinct," although muscular contractions and radial pulsations were evident after one or more applications of the current. Yet in our experiments it is found that not only *is life not extinct* when cardiac beats continue to manifest themselves, but even when life seems to all appearances extinct—when neither respiration nor cardiac beats are being registered by the cardiograph—the animal may be resuscitated by rhythmic electric excitations with the same current that had caused death. The statements regarding the extinction of life, while cardiac beats, radial pulsa-

tion and respiration still persisted, seem, therefore, to be arbitrary for the reasons that follow:

(a) Because our laboratory experiments do not support the opinion that life is extinct when muscular movements, radial pulsations or heart-beats are visible and perceptible.

(b) Because it is not stated that resuscitation had been tried in any one of the cases of electrocution.

In laboratory experiments resuscitation may be obtained, if the lethal current is not continued too long a time, even when respiration and cardiac beats have completely ceased. The procedure is indicated in the tracings accompanying my paper.

The reading of some paragraphs on page 83 gives one the impression that the method by which electrocution is enacted in the State of New York can hardly be called scientific. Indeed we are told that "the number of contacts varied from two to four and the aggregate length of the contacts in each case varied from forty-five to eighty-seven seconds," respiration, cardiac beats and radial pulsations being observed after the 1st, 2d, 3d, and 4th closure.

Yet, under such prolonged and repeated contacts in all the cases, the following conditions prevailed:

"In Kemmler's case there were chest movements, and possibly heart beats, after the first contact (seventeen seconds); in Slocum's, chest movements and radial pulsation after the first contact (twenty-seven seconds); in Smiler's, no movements of chest, but radial pulsation after three contacts (ten seconds each); in Jugigo's, a slight fluttering of radial pulse when final contact was broken, which rapidly ceased."

We are informed that "In all the cases except Kemmler's and McElvaine's contact was broken for the purpose of wetting the electrodes."

This did not prevent vesication to take place, as is indicated in the extracted paragraphs.

"The electromotive pressure varied from 1.458 to 1.716 volts, while the ammeter showed a variation in current of from 2 to 7 ampères."

When such high voltage gives results as horrible as noted here, and the current has to be turned on from two to four times before life is extinguished, it seems to be high time to acknowledge frankly that the method used in inflicting the death penalty by electricity is faulty and unscientific.

I have pointed out in what respect the method is unscientific. Of course, I have been comparing two electric currents of entirely different qualities. But, if the common induction current

gives such horrible results when high voltage is used, is it not time to abandon its use and to replace it by one giving more acceptable results? Besides, the results obtained with the current advocated here may be prearranged almost to mathematical exactness—as compared with the crude and horrifying surprises that have thus far been obtained in the recorded electrocutions.

Electrocution is considered by some as being a method of execution preferable to hanging, because electrocution is the less horrifying and degrading of the two (*). This is, no doubt, quite true—in so far as the advocates' knowledge of the methods of electrocution is concerned. When the method now in use in the State of New York is compared, however, with that described herein, the striking horribleness of the electrocution in use here becomes appalling.

EXTRACTS.**

Touching on the salient points in regard to methods of electrocution.

“ . . . and from which was suspended the head electrode, so as to rest on the vertex, or top of the head” (p. 5).

“The spinal or body electrode was attached to the lower part of the back of the chair and projected forward horizontally on a level with the hollow of the sacrum” (p. 5).

“Before Kemmler was brought into the room the warden asked the physicians how long the contact should be maintained; the writer replied, ‘Twenty seconds,’ but subsequently assented to ten seconds, in deference to the opinion of another that a considerably less period of time would suffice—an opinion which doubtless would have been sustained had the electro-motive pressure been sufficiently great.

“Unfortunately, in this instance, the voltmeter, ammeter, switch-board, etc., were not located in the execution room; hence none of the official witnesses could know precisely how much the electromotive pressure and current strength were at the time of making and during the continuance of the first contact. Nor has the voltage or amperage in this instance, to the writer's knowledge, ever been officially determined,” etc., the conclusion being that “no human being could survive the passage through his body of an alternating current of more than 1,500 volts for a period of even twenty seconds, the contact being perfect” (p. 6).

“The instant the contact was made the body was thrown into a state of extreme rigidity, every fiber of the entire muscular system being apparently in a marked condition of tonic spasm. Synchronously with the onset of rigidity, body sensation, motion, and consciousness were suspended, and remained so while electrical contact was maintained. At

* Dr. Edmund W. Holmes, *Anatomy of Hanging*. *The Pennsylvania Medical Journal*, July, 1901, p. 737.

** Extracts from paper by Dr. Carlos F. MacDonald, *The Infliction of the Death Penalty by Means of Electricity*. *New York Medical Journal*, May 7 and 14, 1892. The numbers of pages refer to the reprint of the paper.

the end of seventeen seconds Kemmler was pronounced dead, none of the witnesses dissenting, and the warden signaled to have the contact broken, which was immediately done.

"For obvious reasons, the only means of determining the question of death while the body was in circuit was by ocular demonstration; so that it cannot be positively asserted that the heart's action entirely ceased with the onset of unconsciousness, though most of the medical witnesses present thought that it did.

"When the electrical contact was broken the condition of rigidity noted above was instantly succeeded by one of complete muscular relaxation. At the same time superficial discoloration resembling commencing capillary post-mortem changes were observed on the exposed portions of the face. The body remained limp and motionless for approximately half a minute, when there occurred a series of slight spasmodic movements of the chest, accompanied by the expulsion of a small amount of mucus from the mouth. There were no evidences of return of consciousness or of sensory function; but, in view of the possibility that life was not wholly extinct, beyond resuscitation, and in order to take no risk of such a contingency, the current was ordered to be reapplied, which was done within about two minutes from the time the first contact was broken. The sudden muscular rigidity noted on the first closure of the circuit was again observed and continued until the contact was again broken. The second closure of the circuit was inadvertently maintained for about seventy seconds, when a small volume of vapor, and subsequently of smoke, was seen to issue from the point of application of the spinal electrode, due, as was subsequently found, to scorching of the edge of the sponge with which the electrode was faced, and from which the moisture had been evaporated by prolonged electrical contact. The odor of the burning sponge was faintly perceptible in the room. There was also some desiccation of the already dead body immediately underneath the electrodes, especially under the lower one," etc. (p. 8).

"In the excitement and confusion of the moment, occasioned by the belief on the part of some that death was not complete, the second application of the current in Kemmler's case was maintained too long—nearly a minute and a half. If there was a spark of unconscious vitality remaining in the prisoner's body after the first contact was broken—there certainly was no conscious life—it was absolutely extinguished the instant the second and last contact was made. That the man was dead, however, comparatively long before the burning of the sponge and desiccation of the tissue occurred, there is no reason to doubt" (p. 9).

... "also that less than four minutes elapsed between the making of the first contact and the breaking of the last one when Kemmler was absolutely dead," etc. (p. 10).

On page 11 the author says that he had suggested application of the head electrode to the forehead, but it is not specified which of the electrodes should so be applied.

"The movements referred to were regarded by most of the medical witnesses present, including the writer, as similar in character to those which have occasionally been observed for a short time in animals experimentally killed by electricity, when this contact was too brief or the current strength insufficient, the animal dying, however, in a short time without regaining consciousness—movements which may properly be

regarded as involuntary or reflex in character, following the too early interruption of the current, and in no sense a resumption of respiratory function, however much they may appear to be so to superficial observers or to those not familiar with the phenomena referred to, as observed in experiments on lower animals" (p. 9).

"In each of the five cases following the Kemmler case—namely, Slocum, Smiler, Wood and Jugigo, executed at Sing Sing Prison, July 7, 1891, and Loppy at the same place, December 7, 1891—one electrode was so applied as to cover the forehead and temples, and the other, a larger one, the calf of the right leg," etc. (p. 11).

"The following summary of these executions, except as relates to Kemmler, is taken from the official reports made to the warden of the prison, the Hon. W. R. Brown, by Dr. S. B. Ward, of Albany, N. Y., and the writer, who appeared as medical advisers for the State:

It is said in part,

"The electromotive pressure varied from 1,458 to 1,716 volts, while the ammeter showed a variation in current of from 2 to 7 amperes" (p. 12).

"In Kemmler's case there were two contacts, through vertex and lower end of spine, lasting seventeen and seventy seconds, respectively, the last one being unnecessarily prolonged; in Slocum's case, two contacts—twenty-seven and twenty-six seconds; in Smiler's case, four contacts, three of ten seconds each and the fourth nineteen seconds; in Jugigo's, three contacts of fifteen seconds each; in Loppy's case, four contacts of fifteen, eleven, fifteen and a half and ten and a half seconds, respectively. (In all of these five cases contact was through the head and leg.) And in McElvaine's case, two contacts, the first one through the hands, lasting fifty seconds, and the last one through the head and leg, lasting thirty-six seconds" (p. 13).

"In Kemmler's case there were chest movements, and possibly heart beats, after the first contact (seventeen seconds); in Slocum's, chest movements and radial pulsation after the first contact (twenty-seven seconds); in Smiler's, no movements of chest, but radial pulsation after three contacts (ten seconds each); in Jugigo's, a slight fluttering of radial pulse when final contact was broken, which rapidly ceased" (p. 13).

"In all the cases except Kemmler's and McElvaine's contact was broken for the purpose of wetting the electrodes" (p. 13).

... "the number of contacts varied from two to four, and that the aggregate length of the contacts in each case varied from forty-five to eighty-seven seconds, at the end of which, if not before, in most instances, both conscious and organic life were absolutely extinct" (p. 13).

"The mean activity developed in heat during the first application was thus 4,080 watts, and in the second 10,500 watts, or about E. H. P., this large expenditure of energy accounting for the considerable post-mortem temperatures that are stated to have been observed" (p. 16).

AUTOPSIES.

The first autopsy and microscopic examination was made by Dr. E. C. Spitzka. The other autopsies and microscopic examinations were made by Dr. Ira Van Gieson.

KEMMLER.—At the site corresponding to the dorsal electrode there "was a burn, presenting four concentric zones," etc.; "succeeding this was a vesication, partial below and complete above, about an inch in diameter above and one-third of an inch below."

"Then followed another zone, which was in its upper third a complete eschar, black in appearance, and in its lower part showed desiccation of a greenish-brown color. The last or inner zone showed a number of vesicles, chiefly peripheral, and below the center was a black eschar, half an inch in its vertical and five-eighths of an inch in its transverse diameter," etc. (p. 18).

"The scalp, on being removed, showed the outer aspect of the vertex of the skull to be in a desiccated condition, corresponding with the site of the electrode as previously noted, but a larger area, being four by four inches, the zone of the scalp being only two and a half by three inches, the long diameter being antero-posterior. On removal of the skull-cap, the dura was normal in texture, somewhat dull in color, particularly over the area corresponding with the zone of contact. In the pre-Rolandic region the meningeal vessels, measuring along the convexity antero-posteriorly four inches on the left side and three on the right, were filled with carbonized blood. On the internal aspect of the calvarium the meningeal vessels in the dura and in their contents appeared to be black and carbonized. The carbonized vessels were so brittle that their ends were torn off with the calvarium and presented a broken, crummy appearance. This carbonization was limited in an abrupt manner," etc. "Over the left cerebral hemisphere, one-third of an inch to the left of the median line, there was a deep carbonized spot corresponding with the desiccated portion of the calvaria. The pia and gyri were of a pale-buff color; the rest of the cerebral cortex was normal in appearance" (p. 19).

"Capillary hemorrhages were noted on the floor of the fourth ventricle, also in the third ventricle and the anterior portion of the lateral ventricle," etc. (p. 19).

"That the 'cooked' appearance of the muscular tissue of the back beneath the site of the electrode, and the desiccation of the skull and so-called 'carbonized' state of the blood-vessels on the internal aspect of the calvaria over the area corresponding to the zone of contact, were due to unduly prolonged second contact, together with failure to properly moisten the electrodes, there can be no question," etc. (p. 21).

JUGIGO.—"There were a few slight blisters on both temples, and both cheeks and eyelids. There were raised whitish streaks on both sides of the neck, just below the angle of the jaw" (p. 21).

JUGIGO.—Floor of the fourth ventricle: "... on the left side there were a number of minute, radiating petechial spots from one to two millimeters in diameter" (p. 23).

SMILER.—"Posterior surface of the body was of the same color, and also showed the same blisters as in the case of Jugigo. The left leg showed the same state of contraction" (p. 23).

WOOD.—"Body presented same appearance as in preceding cases. There was the same contraction of the leg and the same general appearance as in the others. Same condition of epithelium of cornea" (p. 24).

"This tends to show how superlatively complete and far-reaching the effects of the currents are in abolishing life, not only in the concrete form, but also in the integral activities of the body which in other forms

of sudden and violent death is liable to persist for a time after life is extinct. From observations at this execution, as well as at the subsequent examination of the body, the current appears at first not only to extinguish life in the ordinary sense of the word, so far as consciousness, feeling and volition are concerned, with overwhelming suddenness, but reaches beyond this and destroys the energies of the individual component parts of the body so that they cannot be raised into activity by artificial mechanical stimulation, as is usually the case in sudden violent death" (p. 36).

THE JOURNAL OF MENTAL PATHOLOGY.

Edited by LOUISE G. ROBINOVITCH, B. ÈS L., M.D.

VOL. VII.

1905.

No. 2.

STATE PRESS, PUBLISHERS,
NEW YORK.

MSS. and Communications should be addressed to the Editor,
28 West 126th Street, New York.

Address bulky mail matter to P. O. Box 1023, New York.

This Journal is published bi-monthly, except in August and September.
Price of subscription, \$2.50 per annum. Single copies, 50 cents.

Original researches and other MSS. will be carefully considered, and if found unsuitable will be returned, if accompanied by stamped, self-addressed envelope.

THE V-TH INTERNATIONAL CONGRESS OF PSYCHOLOGY.

HELD IN ROME, ITALY, APRIL 26-30, 1905.

The congress was opened at the Campidoglio, in the hall "Orazi e Curiazi," at 10 o'clock A. M. The Minister of Public Instruction, Professor Leonardo Bianchi, greeted the congress in the name of the king. Prof. Bianchi delivered a masterly speech on the science of psychology and he was enthusiastically applauded. The Government was also represented by the Minister of Foreign Affairs, Hon. T. Tittone, the President of Congress, Hon. Fortis, the Minister of Agriculture, Industry and Commerce, Hon. Finocchiaro-Aprile and others. The congress itself was represented by the presidents of the various sections of the congress, Professors Luciani, Sergi, Sciamanna, Tamburini, Sante De Sanctis, etc., as well as by the foreign delegates. The inaugural reception was as brilliant as it was impressive, and the members of the congress carried away a delightful impression of a warm welcome. The meetings were held at the spacious *Policlinico*. Excellent system characterized the proceedings. Indeed, it may be said that it is not common to find as good order as that which prevailed at this congress. The entire mass of work of the members of the congress was classified into four

sections, in which sessions were held synchronously. While a fixed schedule had been published and was ready for use at the opening session, some changes had to be made daily. A daily bulletin gave the exact schedule of the day's work. Credit is due to the Vice-Secretary-General, Prof. Sante De Sanctis, of Rome, for this happy condition of affairs. Prof. De Sanctis is a born organizer, and on this occasion he fully demonstrated his abilities in this direction.

Many valuable papers were read and experimental work of interest was also in evidence. Special rooms were fitted up for the use of the experimentors.

The social part of the congress was a brilliant success. Rome lent itself most graciously to the purposes of hospitality, and the members of the congress fully appreciated the beauty of the Eternal City.

April 26th, the Minister of Foreign Affairs gave a "Smoker." April 27th, a visit was made to the *Foro Romano* under the direction of Prof. Boni. April 28th, the city of Rome entertained the congress in the Capitolin Museum. April 29th, there was an entertainment at the theater Costanzi. April 30, the Minister of Public Instruction, Prof. Leonardo Bianchi, gave a tea for the members of the congress in the Museum of the *Villa Umberto I* (*Villa Borghese*). April 30th, there was a reunion at a banquet at one of the leading hotels. Finally, May 1st, there was an excursion to the Villa Adriana and Tivoli.

Besides these entertainments, there were many luncheons, teas and dinners, to emphasize the proverbial Roman hospitality. Some of the most notable private teas and dinners were those given by Professor and Signora Sciamanna and Professor and Signora Mingazzini, at their respective residences.

The committee of the congress gave several impromptu lunches at the *Policlinico*, some 150 members attending at a time.

From all points of view, the congress was a great success.

THE PROCEEDINGS OF THE CONGRESS.—It is difficult to give any detailed account of the proceedings of the congress at this time. The papers were numerous and some of them were of the highest scientific interest. A general and hasty sketch of the proceedings will be given here and some of the papers will be abstracted in this issue and in that to follow.

Professor Lombroso read a paper entitled "Sulle cause della genialità Ateniese." Prof. Enrico Ferri presided, and the room was filled to suffocation.

Prof. William James read a paper dealing with consciousness

and perception. He had a large audience. He is highly esteemed by the Italians. Dr. Claparède made some pointed critical remarks on Prof. James's notions on perception, etc.

Prof. Flechsig read a paper on the "Physiology of the Brain and the Theory of Volition."

Professor Sciamanna's work excited considerable interest. The subject of his work was the "Psychic Function of the Brain."

Prof. Flournoy, of Geneva, was elected President of the Sixth International Congress of Psychology, which will be held in Geneva, Switzerland.

THE CHAIR OF PSYCHIATRY, ROME.

Professor Sante De Sanctis has been appointed to fill temporarily the Chair of Psychiatry at the University of Rome. The vacancy was caused by the death of Professor Sciamanna.

Professor De Sanctis is one of the most distinguished young psychologists in Italy. He is Professor of psychology at the University of Rome, Italy.

PRINCESS LOUISE.—The report on the mental condition of Princess Louise has been delayed on account of the death of Dr. Garnier. Drs. Magnan and Garnier were to have made the report. Dr. Dubuisson has been appointed to fill the vacancy caused by Dr. Garnier's death. It is thought that the report regarding the Princess's mental alienation will remain negative.

HENRY E. ALLISON, M. D.—Dr. Allison died November 12, 1904. The last fifteen years of his life had been devoted to the care of that most difficult class,—the criminal insane. He took an active part in the planning and construction of the Matteawan State Hospital, of which he was made Superintendent at the time of its opening. This position, which he filled with great ability and honor, he held until the time of his death. He was also a copious contributor of valuable papers on psychiatric subjects. His manliness and professional merit endeared him to those who knew him. He was only fifty-four years old at the time of his death.

PROFESSOR EZIO SCIAMANNA.—The news of the death of Professor Ezio Sciamanna came as a sudden shock. Prof. Sciamanna died in the early morning of May 14th, 1905. He had been suffering for some time from an affection of the liver, but did not allow his indisposition to interfere with his daily occupations, keeping up his work almost to the last day of his life. Early in the morning of May 14th, he was suddenly awakened by a spell of hepatic colic and died before his physician arrived.

Professor Sciamanna was born in Albano, in 1850, and graduated in medicine from the University of Rome in 1876. He then studied with Magnan and Charcot, in France and with Meynert, in Germany and visited the principal neurological centres in London, Berlin and Vienna. In 1881, he became assistant Professor of neurology at the University of Rome, and four years later was appointed Professor of clinical psychiatry at the same University. Besides being an excellent clinician, Professor Sciamanna contributed valuable material to the experimental study of cerebral function. He was one of the great Italian workers in neurology and commanded the respect and devotion of his numerous pupils and colleagues. He was only fifty-five years old at the time of his death.

DR. PAUL GARNIER.—Dr. Paul Garnier died suddenly March 18th, 1905. For many years he had been Chief Physician of the *Infirmierie du Dépôt*, Paris, where some twenty thousand insane are examined yearly before they are sent to the Admission Bureau, at the Ste-Anne Asylum. His important position, his fine qualities as a clinical psychiatrist and his brilliant career as an expert psychiatrist at the Tribunals made him one of the best-known men in psychiatric circles. His works on criminality in general, on juvenile criminality in particular and on alcoholism, are familiar to all. His excellent work in the matter of wresting from the hands of the law hundreds of subjects who were looked upon by the law as criminals, but who in reality were mentally unsound, was as striking as it was scientific. He was one of the most enthusiastic pupils of Magnan's School, and had daily occasions to force on the law the acceptance of the truth that many delinquents and criminals were simply mentally unsound and irresponsible before the law. The vast experience in and knowledge of psychiatry he had accumulated during his active and enthusiastic work in the *Infirmierie de Dépôt* was to have been crystallized by him into a colossal work—when death suddenly stilled his spirit. He was but fifty-six years old when he died.

SIR JOHN SIBBALD.—Sir John Sibbald died at the age of seventy-two years, in Edinburgh, Scotland, April 20, 1905. Almost his entire professional life had been devoted to the study of psychiatry and the amelioration of the conditions of the insane. As Commissioner in Lunacy he had inaugurated a series of important reforms in the hospitals for the insane in Scotland. His frequent visits to France, Germany, Holland and other countries for the purpose of personally studying the newest system of caring for the insane are familiar to the profession. He did not

make these studies in a perfunctory manner: when he wished to learn the true value of certain innovations, such as the colonization of the insane and family care for the same, he went to live in their colonies and watched the development of the innovation. The vast improvements in the Scotch hospitals for the insane are due to his enthusiastic efforts. For some time he had been suffering from a throat affection, but resignedly accepted the fact that it was incurable.

PAPERS READ AT THE V-TH INTERNATIONAL CONGRESS OF PSYCHOLOGY.

HELD IN ROME, ITALY, APRIL 26-30, 1905.

Cerebral Physiology and Theory of Volition.—PROF. PAUL FLECHSIG: the theory of cerebral localization is once more emphasized. The prefrontal lobe is intimately connected with the function of volition. Pathology has fully demonstrated that particular function is proper to every individual cerebral centre. Cerebral embryology also demonstrates the theory of specific cerebral localization. The motor cells are first to appear. The motor zones of the extremities form the nucleus, so to speak, and the other cortical zones group themselves around the motor zone. First in order among these zones is that of ideation and the last is that of association—the frontal lobe being the last to develop. There is a characteristic proportionate difference between the association centres in both sexes.

Psychic Function and the Cerebral Cortex.—PROF. SCIAMANNA: clinicians and physiologists are again discussing the theory as to whether the anterior lobes are the seats of intelligence. The association areas of Flechsig may not be considered as true ideation centres or centres of higher dignity. In 1894, Bianchi declared that the frontal lobes in monkeys were the seats of the highest psychic function, and in 1900, he virtually confirmed his previous opinion. Prof. Sciamanna's experiments on monkeys do not convince him that the frontal lobes in these animals are the seats of the high psychic functions as above. He presented two monkeys, each of which had sustained ablation of both frontal lobes at two different times. Their psychic manifestations, however, did not appear to him to have changed in any way. He concluded, therefore, that ablation of a great part of the frontal lobes in the monkeys presented did not cause any change of their personality. At the very least, it may be said that in monkeys the prefrontal lobes are not the seats of intellectual function, properly speaking. It may be concluded that intelligence is the resultant of the harmonious function of the

entire brain. The psychic disturbances that follow partial cerebral lesions are due to solution of continuity in that harmony, but it does not seem that more or less circumscribed cerebral areas are the seats of intelligence.

Experimental Researches into the Anatomical Localization in Dogs of the Delirious Symptom Due to Pellagrogenous Toxic Agents.—DR. CARLO CENI:

1. The pellagrogenous toxic agents of an excitant and convulsant nature (aspergilliform and penicilliform) have a marked elective action on the centres of the cerebral cortex. The same toxic agents have no physiological effect either on the spinal cord, medulla oblongata or the cerebellum.

2. These toxic agents act by irritation and excitation at the same time, the action being diffuse and involving all the cortical centres, both psycho-motor and psycho-sensorial, without showing any special predilection for one or the other of these centres.

3. The toxic delirium here is localized in the entire cerebral cortex, but especially in the occipital lobes. Ablation of these lobes modifies considerably the manifestations of the delirium. The results of these experiments preclude any supposition of a sub-cortical seat of this toxic delirium.

4. The motor phenomena are limited to the motor region in the strictest sense of the word.

Consciousness and Its Degrees.—DR. PAUL SOLLIER: consciousness is not an autonomous, primordial or independent phenomenon, or a phenomenon that can be isolated, that has an action proper to itself, acting on the other psychological manifestations. There is no consciousness outside of cerebral activity. Consciousness is not even an epiphenomenon, as it exists even when we do not see its manifestations: if every cerebral centre, taken individually, contributes to the production of consciousness, it may be said that there exists an indefinite fragmentation of consciousness—according to the number of cerebral centres that are brought into play; there are local consciousnesses as there are local memories. In other words, the phenomena related to the activity of every cortical centre may be accompanied by a more or less marked degree of consciousness, according to the degree of activity of the centre of action, etc.

“Electric Sleep.”—DR. LOUISE G. ROBINOVITCH:

1. It is possible to produce cerebral inhibition or “electric sleep” by means of an intermittent electric current of low tension.

2. From 1 to 10 volts are necessary to produce electric sleep in a rabbit. For an adult man, from thirty-seven volts and upward are needed.

3. The *Leduc* current produces a quiet sleep with abolition of sensibility.

4. This sleep may be kept up for hours, the cardiac beats and respiration remaining regular.

5. The cardiac and respiratory tracings, obtained with Professor Rouxeaux's cardiograph, demonstrate these facts.

6. The sleep is instantly interrupted with the opening of the circuit.

7. On awakening, the animal does not show any untoward symptoms, ambulating in a usual manner, as if nothing unusual had occurred to it.

8. Practical application of this mode of sleep may be useful in neurology and in psychiatry.

9. During this sleep, it is possible to produce respiratory and cardiac inhibition without killing the animal—if the inhibition is not kept up too long. The animal can be resuscitated with an electric current of a different potential.

10. This mode of cardiac inhibition and legal electrocution—in countries where legal electrocution is in vogue—would be more humane: with this current there is no burning of the flesh and no exaggerated convulsions, the subject being unconscious during the production of the cardiac inhibition.

Experimental Contribution to the Study of So-Called Vital Electro-Magnetism, by Means of the Galvanometer.

—DR. ED. GAST DESFOSSE: with a special galvanometer it was possible to obtain indications of the existence in the human body of vital electro-magnetic currents. Details concerning the various precautions taken to avoid erroneous conclusions are indicated, and theories regarding the nature of this current are considered.

Psychological Study of a Species of Myrmecidæ.—DR. HENRI PIERON: a certain species of ants was studied. The sense of smell is the most powerful directing factor in their psychic life. Ants of the same species and nest, when dipped in an odorous substance and replaced in their former nests were driven out by their associates, etc.

Experimental Researches into the Mentality of the Lower Animals.—P. HACHET-SOUPLET: among other things, it is stated that pigeon letter carriers and travelers of great distances are directed by the sense of vision.

Philosophy and Psychology.—PROF. ADECHI BABATONE: philosophy prepares the path for science. Philosophy undergoes involution with the growth of science that it creates and reaches extinction when science is fully developed.

TRANSLATIONS AND ABSTRACTS OF CURRENT LITERATURE.

The Question of the Relation of Syphilis and General Paralysis at the Academy of Medicine, Paris.—

GEORGES VERNET makes the report in the *Annales Médico—Psychologiques*, No. 1, 1905. There was a spirited discussion by the leading psychiatrists, neurologists, pathologists and syphilographers of Paris, some arguing that syphilis *was* the cause of general paralysis and others saying that it *was not*.

Fournier: general paralysis is unknown during the first two years of syphilitic infection; the earliest onset of general paralysis during the course of syphilis is during the third year after infection. General paralysis is not frequent of occurrence before the end of the sixth year after infection. The most common period of onset is between the sixth and twelfth years after the infection, the maximum onsets taking place during the tenth year. There is a progressive decrease in the onsets between the thirteenth and twentieth years. After the twentieth year the onset of general paralysis is an exception.

In general paralysis syphilis is a constant cause; most frequently syphilis is of a benign nature in its initial stage under those conditions. The constant cause is insufficient treatment of the infection (in four-fifths of the cases). In 15 out of 112 cases there were some predisposing causes: 8 times, nervous overwork; 5 times, alcoholism; 3 times, marked venereal excesses. Twice only was there well-marked nervous heredity.

The best safeguard for a syphilitic subject against general paralysis consists in a methodic mercurial treatment continued during a long period of time.

Prof. Raymond claimed a more important part for the rôle of heredity than Prof. Fournier designated for it.

Prof. Joffroy repeated his well-known opinion on the subject of the relation of syphilis and general paralysis: general paralysis and syphilis are two distinct affections, each having its individuality, and one does not give birth to the other—both being of different natures.

Prof. Cornil and Lancereau agreed with Prof. Joffroy.

The following were the critical remarks made by each orator during the discussion:

Fournier: the extreme frequency of syphilis among the general paralytics; the large number of syphilitics who become general paralytics; the rarity of general paralysis among women, in the country, among the ecclesiastics, the Quakers, etc.; more fre-

quent syphilitic histories among the general paralytics than among other insane. Common association of general paralysis with tabes; heredo-syphilitic origin of juvenile general paralysis; familial, conjugal general paralysis.

Babinsky: the Argyll-Robertson sign is pathognomonic, or almost so, of nervous syphilis, and the Argyll-Robertson sign is common in general paralysis. Hence, fruitless results from syphilitic inoculation of general paralytics.

Prof. Joffroy: the absence of differential characteristics as regards symptoms, course, duration or anatomical lesions in general paralysis whether it is of syphilitic nature or not. Different geographical distribution of general paralysis and syphilis respectively. Rarity of tertiary lesions in general paralysis. Curableness of the tertiary lesions, while the treatment remains powerless so far as general paralysis of the same subject is concerned. General paralytics may contract syphilis and present the two affections at the same time, etc.

Among the figures quoted statistically, showing frequency of syphilis in general paralysis there was between 7 and 94 per cent., according to the individual author. According to Prof. Ballet, statistics alone may throw light on the subject, while according to Lancereau, in medicine statistics almost necessarily lead to erroneous conclusions. Prof. Raymond said that statistics had only a relative value. Prof. Joffroy said that if severely scrutinized, statistics may furnish useful information.

Meilhon, in 1891, drew attention to the fact that the natives of Algeria were considerably subject to syphilis, while general paralysis was of rare occurrence in that country. Prof. Joffroy pointed out that similar conditions obtained in Bosnia, Herzegovina, Japan, Tunisia, Abyssinia, Birmania, Singapore, Java, Korea, Cochin China, on the coast of Malabar, etc., as reported by various competent observers. This showed, he said, that syphilis alone did not suffice to cause general paralysis.

Prof. Raymond quite agreed with the latter arguments, but drew therefrom quite opposite conclusions: it is simply a question of race; in order to produce diffuse general meningo-encephalitis syphilis must find a specially prepared soil caused by heredity. In old Europe, where general paralysis is so common in degenerate families, syphilis finds the proper soil for the production of general paralysis.

Prof. Cornil: there is a great difference between the lesions of diffuse meningo-encephalitis and the specific new formation of syphilis. Profs. Lancereau and Joffroy were of the same opinion. Prof. Raymond called attention to the fact that with the perfec-

tion of method, one finds the co-existence of lesions proper to general paralysis and to syphilis respectively—in the same brain. He cited some personal cases and those of others. Prof. Cornil had never observed such conditions. Prof. Fournier then said that it was wrong to accord to syphilis only one characteristic form of lesion. It is true that the lesions of diffuse meningo-encephalitis differed from those caused by syphilis, but why not admit that when syphilis causes general paralysis it causes lesions quite different from those produced when there is no general paralysis? Barring arbitrary conclusions, it is not right to refuse to accept the fact that the lesions of diffuse meningo-encephalitis are of syphilitic nature—when clinical work teaches that general paralysis is caused by syphilis.

Therapeutic considerations: M. Fournier admitted the complete inefficacy of mercurial treatment in general paralysis. M. Joffroy: as antisiphilitic treatment has no effect on general paralysis, then general paralysis is not of syphilitic nature. M. Fournier: when instituted at the earliest moment, specific treatment is an excellent preventive measure. Prof. Joffroy: mercurial treatment is not a prophylactic against general paralysis.

General regret was felt that Dr. Magnan, so great an authority on this subject, should have chosen to remain silent on this important occasion.

The Normal Malay and the Criminal Responsibility of Insane Malays.—MAJOR CHARLES E. WOODRUFF: it is impossible to apply to the Malay, Philippine Islands, medicolegal precedents found proper in dealing with higher races. Acts that we abhor are perfectly acceptable to the Malay people. Most of them have been in contact with civilization only about from 50 to 150 years and some of them have never been under the influence of civilization. They are still savages, with a brain capacity of from 60 to 80 cubic inches. The normal American brains have from 20 to 25 cubic inches of brain more than the Malays. The Malays are savages, although some of them have money, know how to speak Spanish and wear fine clothes. In cruelty and savagery the Malays resemble very much the Indians: to murder people is an acceptable occupation, and the Malays have an organized society of professional murderers designated as *Manduducot*. The demand for their services is great enough to keep the profession in existence. In their native states they must murder to live, for they are always encroaching on the hunting grounds of others; and when they are subdued by a civilization that permits them to over-populate the country far beyond the means of existence, it

is really a great advantage to have many killed off. Like all savages, the Malays delight in cruel deeds and seem to take pleasure in the suffering of others. There are shrieks of laughter in an audience whenever a performing acrobat meets with a painful accident. Cruelty to animals is a normal trait of these people. Skinning animals alive and beating them to death are every day incidents, the Malays claiming that the meat has a good flavor when the beasts are killed in this fashion. Killing an adversary in a quarrel is an ordinary event. In the details of their cruelty the Malays resemble the North American Indian. When a Malay becomes insane his cruelty is augmented: his homicidal trait is brought out in an exaggerated form, and he generally kills as many subjects as he can, attacking principally women, children and the aged.

A study of the prison types shows that the assassins are physically normal—presenting no stigmata of degeneracy. Lombroso has pointed out in Europe the normality of many assassins. The *ladrone*—the common thieves and robbers, on the contrary, present many stigmata of degeneracy and compare well, in this respect, with Lombroso's "born criminal." Certain savage facial characters, high cheek bones, voluminous jaws, etc., indicated by Lombroso as characteristics of the born criminal among white men, are normal traits of the Malays. Lombroso calls these traits atavistic when found among the whites, but in this he may be mistaken, for there is little or no evidence that our ancestors were ever exactly like existing savages, who have been changed by natural selection very much since they separated from the parent genealogic stem. Indeed, no pure-blooded normal savages look exactly like his type of the white "born criminal."

The ordinary thieves show evidences of degeneration. This is to be expected, because their acts are so harmful and antisocial as to be looked on as wrong by the mass of the people. Among those who present stigmata of degeneracy—misshapen ears, etc., there are no deformities of the teeth; the latter are generally perfect in form and in the contour of the arches, and generally well preserved; the half breeds, or *mestizos*, particularly the Spanish types, have excessively degenerate teeth and jaws. The subjects described are all professional *ladrones*, real parasites upon their kind. *Ladronism* has always been organized, supported and led by the better classes of the people,—the rich and cultivated, the *mestizo*, and it was precisely similar to the organized robbery that existed in London up to 1815. The author remarks that it is curious that nearly all the physically degenerate in the prison were *ladrones*, while the murderers were normal.

The author points out the difficulty attending the administering of American justice to a people of the morality described, to whom murder, robbery, lying and perjury are normal acts. Nevertheless, the American Government is trying to hew its own path and has succeeded in out-doing our own courts in some phases of the administration of justice: if a murderer pleads insanity as an excuse for his act, it is possible to hold such a subject under rigid medical surveillance for the rest of his life as too dangerous to himself and to society to be at large.

All that has been said relates to the full-blooded Malays, whether educated or not. The half-breed, quarter-breed, etc., may be of any grade of intelligence, according to that of their white parents. Some of them are highly intelligent, cultivated and refined, some are great artists and others are prominent jurists. The better elements, who compare favorably with the Anglo-Saxon, are only a small percentage of the population,—less than a tenth of 1%.

Now and then, the Malay character comes out strongly, even in the upper classes, just as the negro character flashes out in strong relief in our mulattos.

The Chinese mestizos are the most vigorous both mentally and physically of all the half-castes in the Islands, as they are descended from two allied types and are the most nearly adjusted to the climate.

The author disapproves of universal suffrage for those peoples, adding that the Americans and others, who clamor for suffrage for all alike in the Philippine Islands, are unfamiliar with the existing conditions there (*American Medicine*, August 5, 1905).

Studies of Endemic Cretinism.—DRS. U. CERLETTI AND G. PERUSINI: the subjects were studied in the Alpine valleys of Northern Italy and great care was taken in the selection of the individuals. Seventy-eight individual histories are given, especially detailed where several members of the same family are cretins. Nervous and mental diseases, alcoholism, syphilis and tuberculosis are not met with any more frequently among families afflicted with cretinism than among others. At any rate, these affections cannot be considered as particular causes of endemic cretinism. Nor is consanguineous marriage a special cause of endemic cretinism. While such marriage figure frequently in the histories of the cases, there are villages there in which such marriages are common, but in which cretinism is not common. If such marriages have any relation to the genesis of cretinism, the effect should be considered in its correct proportions. It is rela-

tively rare to find somatic degeneracies among the parents of cretins. Abortions among mothers of cretins are quite frequent. While extreme poverty is quite marked among the families of cretins, it is also marked in families generally speaking in those countries. It is noteworthy that families afflicted with more than one cretin were rather in comparatively good material circumstances. In eight of the cases the fathers' mentality was below that of the peasants in general. Mental enfeeblement among parents of cretins is equally at a minimum for father and mother respectively. Goitre, on the contrary, is frequent among the fathers, but is the rule among the mothers of cretins. The utmost importance is attached to this fact by the authors. Another important fact underscored by the authors is the large number of cretin children born of the same mother. Out of 38 families examined this was the case in 25. The multiplicity of childbirths is particularly illustrated in four families of cretins: ten childbirths at term and two abortions: 12 confinements at full term; 11 confinements at full term; 11 confinements at full term and one abortion. The mothers of these four families had nursed their own children, artificial feeding being unknown in that country. According to the Sardinian Commission, one-fourth of the fathers and two-fifths of the mothers of cretins are afflicted with goitre. The authors find that the number of mothers afflicted with goitre in the Alpine regions studied is much larger than that indicated by the commission.

Heredity as a cause of cretinism is considered, but in a special light: thyroid insufficiency of the parent—particularly of the mother—is a pre-eminent cause of cretinism. The maternal hypothyroidism is gravely reflected on the offspring during embryonic life, and causes cretinism. Stress is laid on the multiparity of mothers of cretins and the nursing of all the children by those mothers. The relation of the hyperfunction of the organs of generation to hypothyroidism of the mother is pointed out: it is well known that before puberty boys and girls are affected with myxedema in equal proportions, while after the onset of sexual function 83 women are affected with myxedema against 17 men. The harmful effect of frequent maternity on the thyroid gland is evident—particularly in mothers already afflicted with hypothyroidism—as is the case in the countries where endemic cretinism prevails.

The subject is not only born with hypothyroidism, but is also nourished with milk poor in certain elements derived from the thyroid gland. The question of heredity in cretinism is crystallized by the authors by declaring that it should be said of cretins

that *they are born in a state of cretinism*. In one of the prolific families mentioned the two last born of the 10 cretins are the most gravely affected ones. Besides, they presented myxedema at the time of birth. They are twins and were so "fat" at the time of birth that the local papers had notices about them at that time. The skin of both children was pale, yellowish and edematous at birth. The special heredity in endemic cretinism is demonstrated and myxedema at birth is pointed out by the authors for the first time.

A large chapter is devoted to the study of the nosographia, and the fallacy of many existing notions on the subject are brought to light. There are many gradations of endemic cretinism, all depending on the degree of maternal hypothyroidism during pregnancy and nursing respectively. The disease may manifest itself at birth, during childhood, adolescence, mature or old age. A classification, differing from that generally accepted, is presented: it is based on the facts observed in this careful study. The entire work covers some 165 pages and is illustrated with sixteen tables of photographs (*Annali dell'Istituto Psichiatrico, Roma*, Vol. III., No. 2, 1904).

Birth Rate Declining Steadily Since 1860.—The Census Bureau of the United States reports this steady decline in the birth rate. At the beginning of the nineteenth century, the children under ten years of age constituted one-third, and at the end—less than one-fourth of the total population. The decrease in this proportion began in 1810 to 1820, and continued uninterruptedly, although at varying rates, in every successive decade. Between 1850 and 1860, the proportion of children to women of the child-bearing age increased, but since 1860 it has decreased progressively. The decrease has been very unequal from decade to decade, but if the computation is made on the basis of twenty-year periods, it has been regular. In 1860, the number of children under five years of age to 1,000 women, fifteen to forty-nine years of age, was 634; in 1900, it was only 474. The proportion of children to potential mothers in 1900 was only three-fourths as large as it was in 1860.

In the North and West there has been a more or less regular decline, while in the South the decline has been less marked.

In 1900, for the United States as a whole, the proportion of children was only two-thirds as great in cities as in the country districts. In the North Atlantic division, however, it was almost as great in the cities as in the country. In the Southern divisions it is hardly more than half as large in the cities as in the country, while in the Far West the difference is intermediate in amount.

In 1900, the proportion of children born of native mothers to 1,000 native women of child-bearing age was 462; the proportion of children born of foreign-born mothers to 1,000 foreign-born women of child-bearing age was 710, the difference indicating the greater fecundity of the foreign-born women.

The proportion of negro children to negro women from 15 to 49 years of age was largest in 1880, and smallest in 1900. There has been uniformly a larger proportion of negro children than of white children. This difference more than doubled between 1860 and 1880, but in 1900 it was less than half of what it was in 1880, and less than at any other census except that in 1860.

Although the negroes have a larger proportion of children than the whites, it has been noticed that the whites of the South have a larger proportion of children than have the whites in other sections of the country (*New York Times*, Aug. 17, 1905).

On the Reflex of the "Extensor Digitorum Communis."

—PROF. ARTURO MORSELLI: Prof. Sciamanna was the first to indicate what he called the "phenomenon of the middle finger." The details regarding the points along the forearm where the finger reflexes should be searched for are indicated, and it is concluded as follows:

1. In normal individuals the finger reflexes are constant. One or more fingers or the whole hand may be extended in the test. The movement is always prompt, marked, of short duration, ceasing with the return of the finger or hand to the original position. In children under three years of age it is not always easy to obtain the reflex. In old people the reflex is torpid.

2. In pathologic conditions the reflex is modified, becoming exaggerated, decreased or abolished. When exaggerated, this reflex is more marked than any other in the body, and the fingers that generally give a slight response show marked exaggeration. When the tonic tension is decreased, every reflex movement of the fingers is sluggish or scarcely perceptible. When hypotonia is marked, the reflexes both of the hand and fingers are abolished.

3. In some pathologic conditions the reflex may serve to make a differential diagnosis, as between tabes and pseudo-tabes, traumatic, rheumatic and alcoholic neuritis: in toxic conditions the muscular reaction is torpid, while in others it is exaggerated. In hysterical conditions and in hystero-epilepsy it is common to find exaggerated excitability of the extensors, while in the epileptic state and in neurasthenia the extensor reaction is sluggish or abolished.

4. In toxic cerebral affections, as in morphinism, alcoholism, alcoholic pseudo-paralysis, the reflex is torpid. In dementia pre-

cox (hebephrenia and catatonia), in progressive general paralysis and in mania the reflex is exaggerated (*Rivista di patologia nervosa e mentale*, April, 1905.)

Chronic Progressive Chorea. Contribution to Its Clinical and Anatomopathological Study.—DR. DADDI: two cases of Huntington's chorea are reported. In one case, four other members of the family suffered from the same disease. In both cases moral shock immediately preceded the onset of the disease and in one case epilepsy was associated with the chorea. The distinguishing features of the microscopical findings were: numerical decrease of the nervous elements of the cerebral cortex, the maximum alterations being in the motor and psychomotor regions, involving both the cellular elements and the nervous fibers, the superficial zones being mostly involved (zonal layer, layer of the small pyramidal cells, then the medium and large pyramidal cells). Modification of the cellular structure, increase of the neuroglia and vascular changes due to arteriosclerosis. It is pointed out that the changes of the nervous system found are characteristic of Huntington's chorea, that epilepsy cannot be said to be the cause of those changes, because they existed in the case in which there was no history of epilepsy; finally, although both cases were those of old men, senility cannot be incriminated as the cause of the peculiar changes found; the distribution of the lesions quite differed from that found in senile cases; in senile cases certain convolutions show a zonal increase of the third frontal convolution up to 79 years, while in the two cases reported here those convolutions were involved like the others as regards alterations. The author does not consider the pericellular granular infiltration as peculiar of degeneration in Huntington's chorea, because this infiltration is not limited to the convolutions involved. The starting point of the pathology is in the cerebral cells, the other involvements being secondary (*Rivista di patologia nervosa e mentale*, April, 1905).

A Case of Huntington's Chorea with Anatomic-Pathologic Findings.—DR. CARLO BESTA: Huntington's chorea and Sydenham's chorea are two different clinical varieties:

1. Heredity is a constant factor in Huntington's chorea, many generations of the same branch of family being affected with the disease, whereas heredity is almost nil in Sydenham's chorea. Besides, while Sydenham's chorea is generally due to some acute infectious disease, especially to acute articular rheumatism, Huntington's chorea is due exclusively to heredity.

2. Huntington's chorea is a disease of middle age, whereas

Sydenham's chorea is principally a disease of childhood and adolescence.

3. Huntington's chorea is always accompanied by mental disturbances that grow progressively worse and end in dementia. In rheumatic chorea, on the contrary, mental disturbances seldom appear.

4. Up to the present time, no case of Huntington's chorea has been known to end in recovery. Recovery is the rule, on the contrary, in Sydenham's chorea.

The author's case is one of Huntington's chorea. Conclusions:

1. Huntington's chorea is a disease *sui generis*, particularly of hereditary nature, having no relation whatever to other choreas, especially to Sydenham's chorea.

2. In the majority of the cases the anatomopathologic process involves principally the vessels of the central nervous system. Diffusion of the lesion ultimately causes leptomeningitis and consequent alterations of the nervous elements.

3. The anatomopathologic lesions in Huntington's chorea explain the progressive dementia proper to this disease; the motor disorders, on the contrary, are not sufficiently explained (*Rivista Sperimentale di Freniatria*, Vol. XXXI, No. 11, 1905).

The Pathological Anatomy of Exophthalmic Goitre.—DR. G. MACCULLUM: uniform changes have been found in the author's twenty-eight cases. Characteristic changes were observed in: 1, the form and size of the alveoli; 2, the character of the epithelial cells; 3, the character of the colloid; 4, the vascular supply; 5, the connective tissue framework; 6, the lymphoid structures of the thyroid. On the whole, the anatomical picture resembles closely that produced by Dr. Halsted as a compensatory hypertrophy, and it seems probable that this may be explained by some previous injury to the gland, possibly from some foregoing infectious disease, such as influenza, etc., although a definite history of this kind cannot always be obtained. Similar changes may frequently be produced experimentally in dogs by the injection of some injurious material into the thyroid, or even by the maintenance during a considerable time of a suppurative peritonitis, in which, apparently by the diffusion of some poisonous substance, there occurs a destruction of many of the epithelial cells of the thyroid, that are later replaced by the compensatory hypertrophy of the remaining cells. The nature of the primary injury that may produce such a change in exophthalmic goitre is, however, not always clear. No bacteria or characteristic cell inclusions could be demonstrated by microscopic, cultural or inoculation methods.

The parathyroid glands were examined in nine cases and were found normal in all (*Johns Hopkins Hospital Bulletin*, August, 1905).

Race Suicide.—J. R. ALLEN: the real reason for the decrease in the birth rate in this country lies in the slight value placed on human life in its early stages. A human life begins at the moment of conception. The human embryo is a human being at all stages of its development. Yet, mothers all over the country and married women make light of the act of feticide, practicing it extensively because they wish to be free of the burdens of maternity. An unmarried girl is severely punished by the law for attempting or accomplishing feticide, whereas the number of reputable women who look with indifference and with indulgence on this crime is startling. A campaign of education on this subject is urgently needed, and it is too important to be avoided on the plea of modesty. Every girl, before maturity, should be taught the physiologic fact that a human life begins at the moment of conception, and that whoever ends that life, however early in its career, is guilty of murder, and whoever seeks to end that life and succeeds in the attempt is accessory to murder. Abortionists should be prosecuted by the National Secret Service Department and all their cases be tried in the United States Courts. The use of the mails should be forbidden to all advertisements of doubtful character, whether carried in influential newspapers or sent by circulars (*American Medicine*, August 5, 1905).

Persistence of Consciousness After Hanging.—According to an exchange, the Rev. Emil A. Meury, pastor of the Second Reformed Church, in Bowers street, Jersey City, has had experimental demonstration of the fact that consciousness persists for some time after hanging: Paul Gentz, who shot and killed Clara Arnim, in Hoboken, and was sentenced to death for his crime, had arranged with the Rev. Doctor to watch for certain signals after he (Gentz) had been hung. It was agreed that Gentz should twitch his hands twice, then once, and again twice—one minute after the breaking of his neck. The Rev. Doctor is reported to have said: "When Gentz was yanked up, his body stiffened. About three-quarters of a minute passed. Then six men, whom I had told what Gentz had said he would do, and I saw the pinioned hands make the signals. The horror was too much."

The Rev. Emil A. Meury is leading a crusade against capital punishment in New Jersey.

Inquest into the Frequency of Mental Disturbances Among the Personnel of Hospitals for the Insane.—The author of this research desires to remain anonymous and asked Dr. Mignot to comment on this paper and to present it. In a given hospital for the insane, the author had occasion to observe twelve cases of insanity during a period of four years, in a personnel of 325 persons. This is a large percentage. Dr. Mignot regrets that the heredity of the afflicted persons is not given. He remarks that in France it is quite common for relatives of patients to become attendants in order to be near the patients in whom they are interested. Under such conditions it is evident that heredity, not environment, plays the major part in the onset of insanity. Environment also has an influence, no doubt (*Annales Medico-Psychologiques*, No. 1, 1905).

Simulation of Mental and Nervous Diseases Among Children.—DR. PAUL MOREAU: simulation of mental and nervous diseases exists among children. At times the cause for simulation is insignificant, while at others it may be of some importance. Most frequently children simulate by instinct, through irritation or because they are ordered to do so. The form of simulation is variable. If the child has had no example to go by, he chooses some simple, natural form, as anger, lies, etc. If he has had an example, he may simulate some real affections—hysteria, epilepsy, chorea, etc., delirium, mania, melancholia, etc. If, without having had any example, the child chooses to simulate, and he is hereditarily predisposed, he may manifest aberration of sentiment. Children may simulate suicide. Simulation à deux has been observed among children (*Annales Médico-Psychologiques*, No. 1, 1905).

Researches into the Metabolic Changes in Dementia Precox.—DRS. D'ORMEA AND F. MAGGIOTO: this is the third of a series of three papers on the subject. The average amount of urine eliminated during the course of dementia precox is decreased and its specific gravity is lowered, the specific analysis showing:

1. A decreased amount of the total amount of nitrogen eliminated in the urine.
2. A lowered ratio of the total nitrogen in relation to the urea.
3. A marked decrease of the total acidity of the urine.

The decrease of the total amount of nitrogen is not to be wondered at, as there is a marked decrease of the urea and the uric acid: the total acidity is necessarily decreased, as the authors had shown that the acid components were decreased in amount.

The lowered ratio of the total nitrogen in relation to the urea is one more argument in favor of the slowing of the metabolic processes concerning oxydation. The results uphold Kraepelin's theory regarding the disease (*Giornale di Psichiatria Clinica e Technica Manicomiale*, Nos. 1-2, 1905.)

Head Trauma and Dementia Precox.—DR. A. D'ORMEA publishes a case of a girl, 23 years of age, who became subject to dementia precox some two weeks after she had sustained laceration of the bony part of the skull corresponding to the left frontal region. He does not advocate surgical intervention in his case because the symptoms do not correspond with any regional cerebral lesion, but are diffuse. He approves of surgical intervention in similar cases—when the symptoms distinctly indicate that there is a regional cerebral lesion—as was the case in Bonhoeffer's patient (*Giornale di Psichiatria Clinica e Tecnica Manicomiale*, Nos. 1-2, 1905).

Severe Case of Tetanus Cured by Heroic Doses of Tetanus Antitoxin.—DR. CHARLES F. DAVIDSON: the patient, a boy, aged 12 years, while suffering from an eruption caused by *poison oak*, went into a pond to bathe. The pond was usually visited by cattle and hogs. Severe infection followed and the whole right side of the scalp became filled with pus. Free incisions were made and the pus drained; the latter soon extended to the arm, and surgical treatment alongside with antistreptococcic serum in moderate doses—20 cc., 4 times a day—were given. A week after the infection, during which the moderate treatment with antitoxin had been kept up, the patient showed alarming symptoms of tetanus, so that his life was despaired of. Sixty cc. of the antitoxin were then injected under the scapula, this dose being followed by 40 cc. of the same serum. The patient recovered—against all expectations (*American Medicine*, August 5, 1905).

Believes in Peopling the Earth.—According to the *New York Times*, July 25, Charles Leitstone, a pack peddler, left England and a wife and twenty children, six years ago. He had then been married twenty-one years. On his way to this country he fell in love with another woman, but remained faithful as a father and sent his family from \$6 to \$12 weekly for their support. Unfortunately, fifteen of the children died during six years of the father's absence in this country. He then sent for his wife and remaining children, and on their arrival in this country, told his wife the truth about the other woman. The wife was lenient as

to that episode and allowed him his freedom, but insisted on having her allowance to support her family. She was disappointed, however, to find that she could not have any support from her husband because he had had three children with the other woman.

On a Special Form of the Red Blood Corpuscles in Dementia Precox.—DRS. PIGHINI AND PAOLI:

1. The red blood corpuscles, treated with a special method, present a characteristic structure, umbilicated form and larger size than normal.

2. Such changes of the cells are not found in any other forms of general or mental diseases. Similar conditions have been found only in two chlorotic and one epileptic cases. The particular form of red cells should not be considered as pathognomonic of dementia precox, but simply as an index of grave alteration of the metabolism in this disease (*Rivista Sperimentale di Freniatria*, Vol. XXXI, No. 2, 1905).

Acute Anterior Poliomyelitis in the Adult—A. VAN GEHUTCHTEN: a historic review of similar cases is made and a personal case of a woman, 21 years of age, is presented. Poliomyelitis is always an infectious disease, the poison being carried by the blood vessels. The localization of the poison in the gray substance of the anterior horns should be attributed to the special vulnerability of the blood vessels in that locality. Whatever the reason of that special localization, microscopic research shows its existence beyond doubt: hyperhemia and engorgement have been found in all the cases examined. The veins are the vessels affected (*Névraxe*, Oct., 1904).

Contribution to the Study of Hysterical Contractures.—DR. A. PIAZZA: the patient is a man, 27 years of age. He has had several attacks of hysterical contractures of the upper limbs. The spells set in with a sensation of tingling, then, after some few hours of this disturbance, contracture of the both upper limbs was complete. The spells lasted a few weeks each. Hot baths and massage were the remedies used successfully (*Annali dell'Istituto Psichiatrico*, Rome, Vol. III., No. 2, 1904).

A Case of Hydrocephalus and Acrania.—DR. A. E. ENGZELIUS: the skull cap was entirely absent, while the base of the skull was perfectly developed. A membrane that apparently took the place of the absent bones, was ruptured during labor, letting escape brain substance and a large amount of fluid. The mother's heredity is negative. No mention is made of the father's condi-

tion. The mother was a primipara, 23 years of age (*Journal American Medical Association*, Aug. 19, 1905).

John D. Rockefeller Is a Total Abstainer: at a prayer meeting at the Euclid Avenue Baptist Church, the "oil king" declared that he had never tasted a drop of intoxicating liquor, and advised young men to emulate his example in this respect.

Tweed's Son is Said to Have Committed Suicide.—According to the *New York Times*, George K. Tweed, 40 years old, the son of William M. Tweed, of New York, committed suicide at the Connecticut Hospital for the Insane, on July 14, by jumping from a third story window.

While in a Somnambulistic Sleep, Walked off a Car of a Train That Was Carrying Him to Suspension Bridge: according to the *New York Times*, June 17, Bernard Rademacher accomplished the feat, and wandered about in the woods for two days after the accident. When found, he was uninjured physically, but was taken to a hospital for mental treatment.

Kills Husband and Daughter and Commits Suicide.—Mrs. Emma Winstandly, of New Albany, Ind., according to the *New York Herald*, August 11, shot her husband in bed, drowned her eight-year-old girl in a bathtub and poisoned herself by swallowing carbolic acid. The woman had been melancholic for several months previous to the accident.

BOOK REVIEWS.

Studies in the Physiology of Sex. Sexual Selection in Man. 1, Touch. 2, Smell. 3, Hearing. 4, Vision.—By HAVELOCK ELLIS. Davis Co., publishers, Philadelphia, 1905. The chief stimuli that influence sexual selection come through the four senses of touch, smell, hearing and sight. Touch is the most primitive and most important, although it is usually the last to make its appeal felt. Smell, that occupies the chief place among many animals, is of comparatively less importance, although of considerable interest, in man. Sight occupies an intermediate position and is the most important of all the senses from the human sexual point of view. Hearing is the most remote of all the senses in its appeal to the sexual impulse, but when it intervenes, it is among the first to make its influence felt.

The four senses mentioned are considered in detail individually, as regards their influence on and relation to sexual selection.

While the study is simple, it is highly interesting and instructive.

As the main purpose of human existence seems to be that of reproduction, the function of our main special senses is directed towards the furthering of nature's plan in this respect. The author clearly demonstrates that touch, smell, hearing and sight, in their various manifestations are factors in provoking the gen-
esic appetite, and he leads us through the epochs of gradual evolution or involution in the manifestation of the four senses among various races, nations and peoples. A kiss is one of the manifestations of touch; and in China fathers leave off kissing their daughters while they are still young children. Lombroso has pointed out that maternal love has a sexual basis in the element of suckling, and the author points out that suckling has an element of touch. An instructive chapter is devoted to the consideration of the cult of the skin among the classic peoples and the antagonism of primitive christianity to this cult, substituting for it that of personal filth. Under these circumstances "morality gained, but cleanliness lost." Then followed the period of the use of cosmetics, essences, perfumes and—a fierce war with vermin—up to the seventeenth century, when elegant people washed their faces "nearly every day."

Every nation has its special body smell, and the latter has its special importance in the promotion of sexual appetite. The odor of Australian blacks is less strong than that of negroes. The Chinese have a musky odor, and the Europeans have a stronger smell than have the Japanese. The smell of the body is generally proportionate to the hairiness of the body and its pigmentation. A strong personal odor is so uncommon among the Japanese that "armpit stink" is a disqualification for the army. Many Chinese can tell by smell when a European has been in a room. There are some Europeans who can recognize and distinguish their friends by smell. The body odor of the castrated differs from that of normal individuals. Among peoples inhabiting a large part of the world's surface the ordinary salutation between friends is by mutual smelling of the person. On the Gambia, when a man salutes a woman, instead of shaking her hand, puts it up to his nose and smells it twice on its dorsal side. The emotional value of personal odor widely prevails throughout the world. According to Marro, sexual offenders present a larger proportion of anomalies of the nose and sexual organs than do other criminals.

Perfumes are used, by the savages and civilized nations alike, for sexual purpose. Musk and *peau d'Espagne* were used by the most ancient nations and are still used to-day. Musk is a sexual

odor. The odor of the negress is said to be musky, and among Europeans it is said to be characteristic of blondes. Musk is particularly used in the Islamic world. The excessive use of perfume is injurious, causing marked fatigue and nervous exhaustion. This fact is well known among workers in perfumeries. Dementia precox is especially liable to affect dealers in musk. The vocal cords of singers are sensitive to perfumes, the scent of violets being especially injurious. Sexual inverts are peculiarly susceptible to odors.

Music has an influence on the genescic psyche, and some subjects have their erotic feelings aroused by listening to the choral singing in the Roman Catholic churches.

Similarity of coloring and features is the rule in sexual selection. The most noted beauties are not necessarily of fair coloring: in England the noted beauties are dark of complexion. The reason poets have always sung of fair beauties is that the majority of poets were of fair complexion themselves, and their companions of the opposite sex were also of light complexion. People of light complexion are more energetic and for this reason, probably, more responsive to sexual life.

The subject treated of in this work is not only of special, but also of general interest, and every educated man will find here useful information about things with which he should be familiar.

General Psychology. With Physiological and Graphic Illustrations, Twenty-one Colored Plates and 285 Illustrations.

—PROF. I. A. SIKORSKI. S. V. Kouljenko, publishers, Kieff, 1905: A moderate number of introductory chapters on the fundamental sciences are presented, indicating the major studies in anthropology, anatomy, physiology, biology and sociology that are necessary for the proper understanding of psychology. Heredity and degeneracy are considered in proper proportions to the subject in hand. The chapters on the psychology of nations are of marked interest, although one cannot agree with the author on all points of national psyche—as presented by him. The physiologic characteristics of nations: the erect posture—requiring a certain amount of energy—is most frequently assumed by the nations of high civilization. The Mongolians, on the contrary, sit or lie down for prayer, etc. It has erroneously been assumed that the sharpness of the five senses was more marked in the lower races. Meyers shows that the acuteness of hearing, for instance, is less marked in savages than it is in civilized nations. Savages may recognize certain sounds, that they are expecting, quicker than civilized nations would, but the acuteness of hearing

in its absolute value is more marked in civilized nations. The future of nations depends on their adaptability to climate and geographical surroundings. The Mongolians, particularly the Chinese, are the most enduring race in this respect: they are satisfied with a simple and uniform food, are untiring in work and resist tuberculosis and syphilis to a striking degree. The Europeans, on the contrary, are threatened with the "white plague," syphilis and alcoholism. The aborigines of Russia and America are sensitive to alcoholism, while the negroes are sensitive to tuberculosis. For Americans (no specification is made) syphilis is a dangerous and often fatal disease. The Jews are endowed with the highest power of accommodation to climate, and Broca designated this quality as *anthropologic cosmopolitism*. Intermarriage of races does not always give similar results: the Turkish nation gained in racial quality by intermarrying with white races, while the Greeks, with their high psychic qualities, perished probably on account of national intermarriage with Albanians, Slavs and other nations. The Japanese present a particularly striking example of good results from their national fusion of Negro, Caucasian and Mongolian races.

The cranial capacity is smaller in the negro than in other races, and the negro is characterized by elementary mentality. The yellow races are untiring, have well developed attention and perseverance and have distinguished themselves in the various industries and agriculture; but regardless of their history of ten thousand years' standing, they have not surpassed in deep intellectual life. The whites are characterized by well balanced volition and sensory function that harmonize with their high mentality.

It is difficult to know why the Greeks have disappeared. It is presumed that the national mixture of the aborigines, who were of dark complexion and eyes, and the new-comers, who are described as having been of high stature with fair hair and eyes, caused that nation to perish.

The Russian nation is the result of a mixture of Finns and Slavs, with a slight admixture of Mongolians and Tartars. The Russian marked characteristics are sadness and resignation. The sadness is appreciable in the popular song. The emotional side of the Russian Psyche may be compared to that of the Roman races. The weakest trait of the Russian nation is the will-power: the latter is less developed than in other nations, and this characteristic strikingly differentiates the Slav from the Teuton and Anglo-Saxon. The Finns have a strong will-power, but deficient mental vigor.

The English nations hold the first place as regards stature, body

weight, physical development and strength. Will-power is developed better than in any other nation. The English-speaking subject is enterprising, persevering and daring. The different national elements that made up the present nation are responsible for these conditions.

The Germans have some of the characteristics of the English-speaking people, but rise higher than other nations in their scientific achievement.

The marked characteristic of the French is high impressionableness; the latter is caused by high sensorial development.

The Jew is known for his perseverance, endurance and high mentality that surpasses his emotional sphere.

Numerous chapters are devoted to the study of the anatomy, physiology and pathology of the nervous system in relation to human psychology. All the chapters are profusely illustrated with cuts, photographs from life and of celebrated drawings and paintings. The great effort to complement verbal arguments on this science with graphic demonstration is praiseworthy. This is one of the rare works on psychology in which the subject matter is treated of in a direct, comprehensive and scientific manner, while the reader's interest is held throughout the large volume *in quarto* of 574 pages. The price of the volume is 5 roubles.

Grundlinien Einer Psychologie der Hysterie.—WILLY HELLPACH, DR. MED. ET PHIL., Neurologist in Karlsruhe. W. Engelmann, publishers, Leipzig, 1904. The work consists of a heavy volume of over 500 pages, but little of what is said in it on the subject of hysteria is based on facts. The reading of the book is interesting, presenting almost a review of the various philosophies of the past and present, the arguments adduced are clever and plausible, but no clinical or pathological teaching is brought forward as a basis of the study of hysteria. It is true that the subject the author has undertaken to analyze is difficult to handle, but in matters medical we look to-day for facts. Unfortunately, these are conspicuous by their absence, while an abundance of theorizing fills the pages of the entire work.

Grundriss der Heilpaedagogik.—DR. THEODOR HELLER, Director, Medico-Pedagogic Institution, Vienna-Grinzing. With a plate of two figures. W. Engelman, publisher, Leipzig, 1904. This is an interesting volume on the treatment of backward children and youths. The author appears to be thoroughly familiar with the subject of which he treats, basing his remarks, methods and advice on well known clinical facts. Interesting clinical

tables of different authors are presented, showing the causes of idiocy and imbecility respectively. In the study of his subject the author considers his cases from the standpoint of the latest discoveries in medical science. The volume is a useful book for psychiatrists and general practitioners.

Mental Diseases. Vol. I, General Psychopathology. Vol. II, Special Psychiatry. A Textbook for Physicians and Jurists.

—PROF. P. I. KOVALEVSKI. 5th edition. "Vestnik Doushevnich Boleznei," publishers, St. Petersburg, 1905. The first chapters are devoted to the study of normal psychology of man. The reader is then gradually brought into the domain of elementary psychiatry and finally psychiatry properly speaking is considered clinically and pathologically. Prof. Kovalevski is well known to the psychiatric world, and his works have long since been known for their scientific merits. Prof. Kovalevski is an accomplished clinician, and the fact is thoroughly reflected on every page of his work. One half of the volume is devoted to the study of general psychopathology and the other half to the consideration of special forms of mental diseases. The volume is in 8-vo, 656 pages of closely printed small type.

La Simulacion en la Lucha por la Vida.—DR. JOSÉ INGEGNIEROS. F. Sempere & Co., publishers. Valencia, 1905. This is a small volume in 16, of 254 pages, but full of interesting facts: simulation is practiced in all nature—wherever there is struggle for existence. The color adaptabilities of the chameleon is only one of the many similar adaptabilities in nature of all that needs to struggle for an existence. Simulation is the basic principle in commerce, in society, etc. The politician, the merchant and all sorts of subjects are forced to simulate in order to succeed in the struggle for existence. The little book is written in an easy style and makes interesting reading based on interesting data.

Lezioni Di Anatomia Clinica dei Centri Nervosi.—

PROF. G. MINGAZZINI: the first part of this work was presented at the Congress. Nearly every page is illustrated with one or more figures of the anatomy of the nervous system, and the subject is handled in a clear, practical way. Each lecture is complete in itself and may be purchased separately. The entire work will be a valuable addition to neurological literature.

THE JOURNAL OF MENTAL PATHOLOGY.

VOL. VII.

1905.

No. 3.

ON THE PATHOLOGY OF THE NEUROFIBRILS.

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Rome, Italy).*

In 1902, one of us undertook, in Prof. Nissl's laboratory, the research into the neurofibrils with a view to applying Bethe's method to anatomo-pathology. The *technique* was scrupulously carried out under the personal supervision of Prof. Nissl, who had himself spent some time in Bethe's laboratory. After having made several hundred normal and pathologic preparations by the Bethe method, one of us gave up the application of the method for several reasons: the endocellular network of Bethe was brought out distinctly only in a few cells, while the pericellular network was quite distinctly brought out by the same method in many cells. This particular network Bethe identifies with the neurokeratinic network of Golgi (Golginetze of Bethe).

In October, 1903, Ramon y Cajal published the first paper presenting a résumé of the new method of metallic impregnation and successive reduction as applied to the neurofibrils. Although the results are not always obtained by the same method, the neurofibrils are brought to light with relative facility and frequency in cells of the same section. This fact prompted us to take up again our researches with a view to determine certain eventual modifications of the new morphologic elements under given pathologic conditions.

Firstly, we studied the spinal cords of rabbits after resection of some of the spinal roots on one side. After a period of from eight to fifteen days, the animals were killed and the segments of the cords corresponding to the resected roots were taken for study.

In the anterior horns we found that while some cells presented neurofibrils, others did not. This was true both of the side operated on and the normal one. On the side where the experimental lesion had been produced, however, it was evident, if

examined with insistence, that there was a larger number of cells without neurofibrils, or cells with badly stained neurofibrils, than on the normal side. We did not pronounce ourselves definitely on this subject, however, because there is generally a difference, although sometimes slight, between the silver impregnation of both halves of the cord. This difference could be observed both in normal and pathologic specimens. It was impossible for us to determine the cause of this difference of impregnation.

In face of the importance of this cause of error and the difficulty the comparative study of the normal and pathologic cells presented, we considered it wise to limit still more the surface of research to one even smaller than is that of the section of the spinal cord in question. We chose for our study, therefore, the cells of the external geniculate body of the optic thalamus. We produced in that body axonal degeneration by excising the parieto-occipital cortex on the same side, the surface of excision covering 1.5 square centimetres. The healthy cells of the internal geniculate body of the same side were used for comparison.

We studied the thalamus of the rabbits operated on at various periods,—from eight to twenty-five days after the operation, always being guided by comparative sections stained by the Nissl method. The optic thalamus was impregnated with nitrate of silver, either in its entire mass, after sectioning it in two by a cut perpendicular to the axis of the 3-d ventricle, or after cutting it in four parts by this and an additional cut passing in the direction of the axis itself of the 3-d ventricle. In this manner we succeeded in obtaining various degrees of impregnation.

From three to eight days following the operation we certainly did not find any lesions of the neurofibrillary network of the cells of the external geniculate body on the side corresponding to the operation. There were some cells in this body that did not present any trace of neurofibrils, while others presented slight traces scarcely visible. Similar conditions existed, however, in the geniculate body of the opposite side as well as in both internal geniculate bodies. Where the lesion had persisted for a more or less long period of time, from ten to fifteen days, however, we found certain specific modifications of constant occurrence. Even in sections not marked, it was easy to recognize, even under low power, the external geniculate body on the side that corresponded to the lesion, the whole being of light-yellow color, whereas the other thalamic ganglia were of a light-brown color more or less marked.

Under a higher power it could be seen that a large number of the cells of the external geniculate body, on the side of the lesion,

did not present any neurofibrillary network; nevertheless, there were some cells in which coarse and rarified neurofibrils persisted. In the other ganglia of the thalamus the number of cells in which the neurofibrillary elements were not visible was quite smaller.

Where the lesions dated more than fifteen days there was a marked retraction *in toto* of the tissue corresponding to the external geniculate body. The impregnation with the silver salts was considerably marked here and this made it difficult to recognize the nervous cells that were supposed to be altered.

In the other cellular bodies of the thalamus we brought to light splendid networks of neurofibrils, especially in the large cells near the middle line.

The meagre results obtained by the new experimental research led us to give up our self-imposed conditions—those of obtaining *in the same section* normal and experimentally altered cells. Indeed, we found that even when we realized this self-imposed condition the comparison between the different cells was not always satisfactory, as the impregnation varied from cell to cell.

We decided on a new method of procedure, that of ligating the abdominal aorta—immediately above the renal arteries. The animals used were rabbits, and they were killed 12, 24 and 48 hours after the operation. In some cases the ligature was taken off after a period of from 4 to 8 hours, the animal being killed 36 to 48 hours after the first operation. It is well known that under the above mentioned condition especial cellular chromolysis in the lumbar region of the spinal cord is particularly pronounced. We then compared sections as above with those of the region of the cervical enlargement.

The positive conditions found were the disappearance of the neurofibrils and the homogeneousness of the cellular protoplasm in the cells of the lumbar enlargement. These conditions were found forty hours after the permanent ligature and thirty hours after a temporary ligature that had been applied to the aorta for six hours (see Fig. 3). We could frequently find the neurofibrillary elements in the cervical enlargement of operated animals as well as in that of normal animals (see Fig. 1).

In 1904, as soon as Donaggio published his method of staining the neurofibrils, we repeated our experiments with a view to testing the value of the new method.

We obtained in normal tissues excellent preparations, showing the fine endocellular network, thickening of the same network around the cellular nucleus (*cercine perinucleare*) and the continuous tracts of the fibrils (*fibrille lunghe*),—all described by the author in his numerous papers on the subject. Nevertheless,

this method does not seem to us to give constant results either in the same or in different pieces. We do not wish to affirm that this depends on the duration of the process of staining with theonine or on the difference of penetration of the molybdate of ammonium into the various layers of the nervous tissues. In a word, it is certainly difficult to obtain a continuous series of sections of the same pieces showing a continuous and uniform representation of the neurofibrils. Moreover, one often finds in one normal section a mixture of cells with splendid network—neurofibrils side by side with cells poor in this network or simply a large network made up of coarse granulations. In a word, these defective results are similar to those obtained with other methods although, it should be admitted, to a much smaller degree, the additional advantage of the Donaggio method being that of showing more clearly the richness and delicacy of the fibrillary network (See Fig. 4).

We give below in a few words the results obtained by this method as applied to the research into the neurofibrillary alterations in asphyxia of the nervous tissue (ligature of the abdominal aorta).

In rabbits that had lived from 30 to 48 hours after the operation, we found in the lumbar region of the spinal cord cells with their neurofibrillary network far more frequently than we did in similar specimens of sections prepared by the Ramon y Cajal method.

In many cells the neurofibrils were less numerous than in specimens called normal; the fibrils were somewhat thickened, varicose and frequently replaced by fine granulations disposed in series (see Fig. 5).

We wish to remark that in our collection of normal sections we have specimens of cells very similar to the above, although in a different numeric proportion—at all events—smaller than in our pathologic sections.

The results, properly speaking, are not as brilliant and varied as we expected to find them in the study of pathologic modifications of so complicated an apparatus as is the neurofibrillary network, and studied with methods so various. It is not our fault, however, if a self-imposed rigid analysis of the different results restrains us from making more generous conclusions.

If we consider that our conclusions apply simply to the experimental research, in which the changes of condition are well known and can readily be controlled, it would seem that when applied to researches in pathology in general the reserve should be still more strict.

SUMMARY.—Some authors are striving to describe the morphologic changes of the neurofibrils and put them in relation to various experimental and pathologic conditions. It seems, however, that our present knowledge of the *technique* as applied to the study of the pathology of the neurofibrils has not yet reached the stage in which it would enable us to determine what constitutes types of alterations representing various pathologic conditions.

Naturally, there is nothing more suggestive than to see in the pages of those works figures of cells, especially chosen, in which are seen pale, thickened neurofibrils or replaced by more or less coarse and diffuse granulations—alongside with neurofibrils representing normal neurofibrillary networks.

We have already remarked that it is not at all difficult to find similar morphologic modifications in sections of normal nervous tissues. Nevertheless, we should distinguish two conditions: either the neurofibrillary network presents positive or negative modifications. In the first case,—thickening, varicosity (see Fig. 2) and abnormal tortuousness of the neurofibrils,—the morphologic modifications, however, should be applied to pathologic conditions only in cases in which a considerable number of the cells, not to say all, present the given modifications, while such cellular modification does not exist in the normal tissue or exists only in a small number of cells. Without this standard the results become more and more dubious in their significance; without such a standard a comparison with an homologous normal part of tissue treated by the same method is not decisive; or one cannot be certain that the lesion is not an artifact; this is particularly true as regards the impregnation obtained with the silver method.

At all events, at present these positive modifications can only constitute the starting points of a neurofibrillary pathology.

In the second case, when the modifications are negative,—that is to say, the modifications that have been designated by the terms *disappearance of the network*, its *pale stain*, *granular degeneration* (?) and *granular disintegration of the neurofibrils*,—terms used to indicate the various pathologic metamorphoses of the neurofibrils, one cannot be too careful in the interpretation of those facts, because of the inconstancy of the positive results of impregnation and stain. The metallic method furnishes particularly feeble impregnation of some specimens; this—not only in different sections but also in cells of the same section and even in different parts of the same cell.

We have normal sections, treated by the Ramon y Cajal method and even by the excellent method of Donaggio, in which we find

cells with an excellent neurofibrillary network in one half of the cytoplasm, while in the other half the neurofibrils are cut up into granular fragments (cells of the anterior horn of the spinal cord of rabbits, dogs, etc.). It is necessary to add that the groups of pigments were totally absent in these cells. Moreover, it is quite common to find a very pale endocellular network in all or in a good many of the cells of normal tissue.

From what precedes, it is evident that in the negative modifications it is particularly necessary to have control cells in the same section, that is to say, cells with neurofibrillary networks. Besides, it is essential to have a constant and considerable numeric difference between the cells of the normal and pathologic tissues. If, however, there are no normal cells that can be used for comparison in the same section, it is necessary to obtain them in another, but they should be treated exactly by the same method as are the pathologic cells. Even then, the result remains uncertain (see Fig. 3), showing the aspect that present *almost all the cells* of the lumbar region of the spinal cord after ligature of the abdominal aorta in a rabbit (Ramon y Cajal method).

The pessimism that permeates the above conclusions is inspired not by any easy criticism, but is the result of our experience. We consider it useful to thus present our ideas simply to prevent, if possible, a repetition of useless work by many anatomopathologists, such as has been done by the Golgi method—a method giving inconstant results, but that nevertheless has given marvelous results in normal anatomy.

We feel prompted to call to mind the danger suggested in Descartes' aphorism, "la méthode crée des résultats," whereas we find this same aphorism applied by an enthusiastic and productive author who has made researches into the pathology of the neurofibrils,—an application made, perhaps, with a view to justify the richness of his brilliant results.

Nevertheless, the methods of the last few years are progressively showing us how to obtain constant results. Our pessimism, therefore, should not lead us to inactivity, but, on the contrary, to prudence in drawing conclusions from the facts observed.

Among the various methods, that of Donaggio gives splendid results and has a great future.

Whatever has been said above, it seems that even if the perfection of the *technique* enabled us in the near future to obtain constant results in the study of the neurofibrils—in pathologic states—it would not be just to conclude that we should at the same time be enabled to draw eventual vital conclusions as regards general pathologic histology. There are two reasons for this:

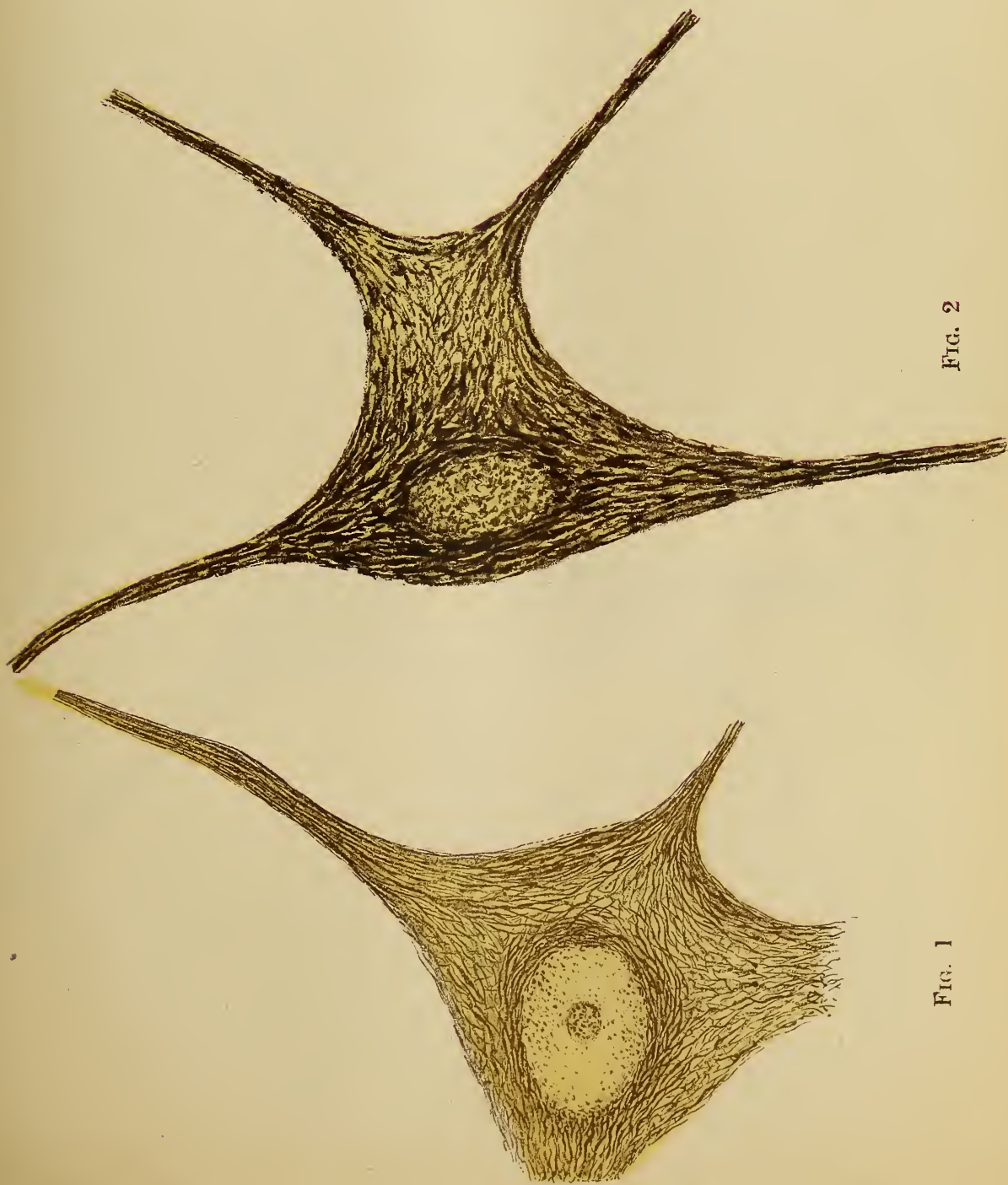


FIG. 1

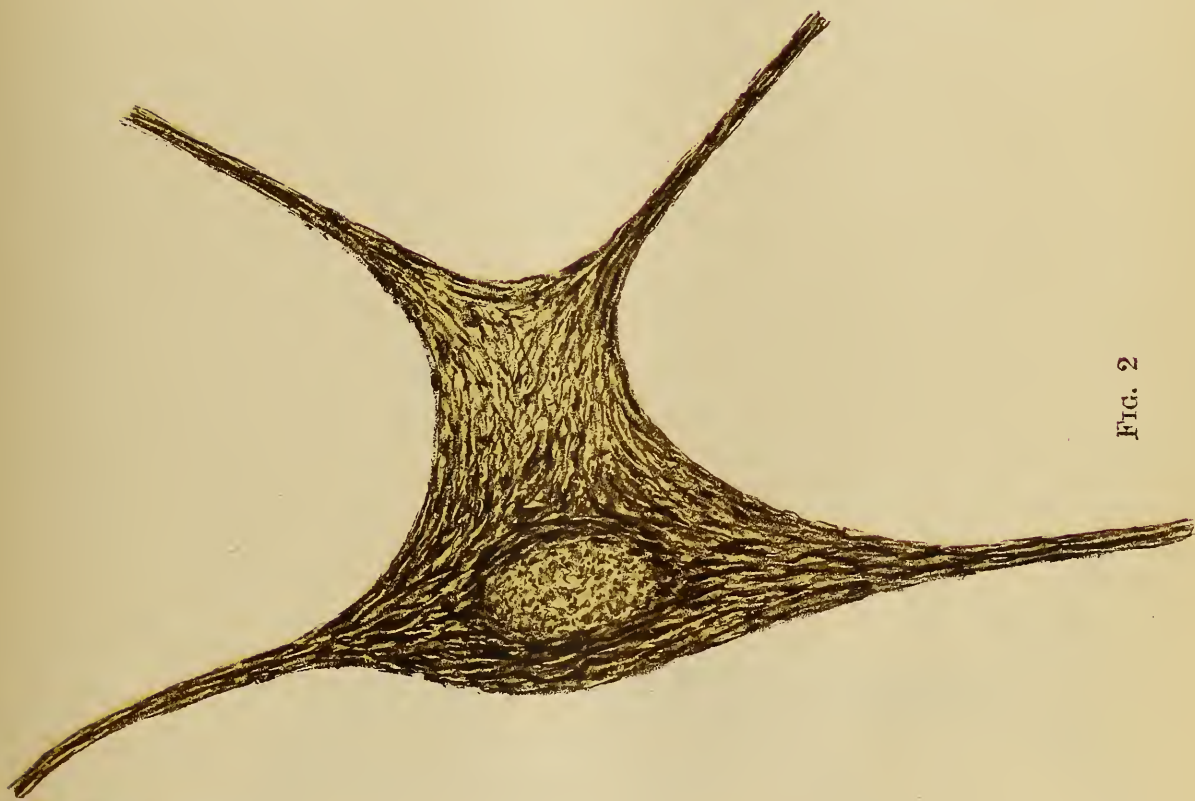


FIG. 2



FIG. 3

1. The pathology of the neurofibrils is only part of the pathology of the nervous cells. Indeed, before determining the type of cellular alteration it is essential to recognize not only the modifications of the endocellular network, but also the modifications of the morphologic complexus of the cellular elements,—its volume, chromophile bodies, the different prolongations, the nucleus and its different parts, the nucleolus as well as the different immediately pericellular elements. These modifications can be seen only by means of special methods.

2. Our present methods applied to the study of the neurofibrils, according to our researches, bring to light modifications of the cellular elements only after a relatively long period of time.

For the present, the classic method of bringing out even the slightest pathologic alterations of the nervous cells remains the Nissl method that is extremely sensitive. It enables us, for instance, to bring out axonal degeneration with all certainty two or three days after the onset of the lesion. With the methods of to-day applied to the study of the neurofibrils, on the contrary, these lesions cannot be brought out before the lapse of some ten or twelve days. The absolute constancy of the reactions of methylene blue in the different cellular types well fixed (*Æquivalentbilder*) makes the Nissl method the only one that can to-day render us immediate service in the study of the pathology of the nervous cells.

Rome, December, 1904.

EXPLANATION OF THE ILLUSTRATIONS.

Fig 1. Nervous cell, anterior horn, cervical region of the spinal cord of a rabbit. RAMON Y CAJAL method.

Fig. 2. Nervous cell, anterior horn, lumbar region of the spinal cord of a rabbit, six hours after the permanent ligature of the abdominal aorta. RAMON Y CAJAL METHOD.

Fig. 3. Nervous cell, anterior horn, lumbar region of the spinal cord of a rabbit, 30 hours after the temporary ligature of the abdominal aorta had been on for six hours. RAMON Y CAJOL METHOD.

Fig. 4. Nervous cell, anterior horn, cervical region of the spinal cord of a rabbit. DONAGGIO'S METHOD.

Fig. 5. Nervous cell, anterior horn, lumbar region of the spinal cord of a rabbit, 48 hours after the permanent ligature of the abdominal aorta. DONAGGIO'S METHOD.

REMARKS ON A SPECIFIC HUMAN ENERGY AND ITS ECONOMIC AND SOCIAL SIGNIFICANCE.*

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Every human being represents a certain quantity of potential energies, the greatest part of which is developed and utilized in the direction of^{*} genesic function. Far from attempting to delve into the mystery of this particular distribution and transformation of human energy, it is rather intended here to take it for granted that the destiny of man is similar to that of every living cell—to live and to reproduce itself.

Reproduction is essential to every nation that desires to maintain its numerical strength among peoples. It is natural, therefore, to hear a peal of alarm arise when the likelihood of a progressive decrease of reproduction manifests itself in any given nation. Disregarding personal opinions, and treating the subject solely from the standpoint of actual cause and effect, the student of the question is provoked to derisive mirth when faced with the various seriously vouched for causes of genesic insufficiency of our society.

According to Lady J. C. H. Gordon, college education of woman is responsible for the paucity of birth rate: only one out of six graduates of Girton College, at Cambridge, marries. The same percentage obtains among the graduates of Somerville College, at Oxford. Since 1871, five out of eighty-five graduates of the Newham College, Cambridge, have married. These were students in mathematics. Of sixty-four students in sciences ten were married. Of sixty-four students in history nine married, and of thirty-eight students of languages only one married (1).

In face of such direct data, therefore, education of women is at once to be accepted as a dangerous source of national sterility. No sooner does one become accustomed to this point of view, however, than another study of the genesic psyche of

* Vth International Congress of Psychology, held in Rome, Italy, April 26-30, 1905.

woman confronts us with quite opposite results. "The college women, although marrying two years later than their sisters, cousins and friends, have borne a slightly larger number of children per years of married life, and there is practically no difference between them as regards the mortality of children, health before and after marriage, or accidents of pregnancy. These conclusions are nearly identical with those reached by Mrs. Sedgwick ten years ago concerning the English college women, as compared with their non-college sisters. The most striking contrast between the two classes is the marked tendency of college women to earn their own living before marriage, to marry college-educated and professional men, and in the fact of their higher average income" (2). Another interesting item in the study quoted above is that "the college women have a high percentage of male children (55%) as compared with non-college women (45%)."

We are thus confronted with opinions of two learned persons, one claiming that education of women leads to celibacy and "race suicide", and the other claiming for the college woman not only the opposite of this peril, but also that, economically speaking, the college woman is a blessing to her land because she marries more wisely, has as many children as the non-college woman and, besides, has more male children.

Many pages could be filled with names of equally learned people who have published volumes, books and pamphlets—every one insisting on his particular point of view and demonstrating that education of women *is* the cause of "race suicide" and that it is *not* the cause of "race suicide". One side claims, among other things, that an educated woman who can support herself is a double contributor to "race suicide": because she is materially independent and can remain single and because she deprives a man of money, which, if he earned it, would enable him to support a family. Some take a less clear and even a gloomy view on the subject: in an effusion of sympathy for the woman thrust on the battlefield of the higher professions, they weep for her inferiority of mental capacity that must eventually doom her and thus cause "race suicide". Professor Zuccharelli is one of those who sympathize with nations overburdened with educated women (3).

Turning to some other sources of information on the question of "race suicide", one is confronted with the following duly vouched for facts:

Among the poor the birth rate is high, but the infant death rate is most shockingly higher in proportion to that in the well-to-do classes.

Among the wealthy and the middle classes the birth rate is low and this contributes to "race suicide".

Commenting on the small proportion of children among certain classes of society, Dr. Inez C. Philbrick presents some strikingly interesting views on the subject (4). Criminal abortion is considered as one of the factors that leads to "race suicide." According to the statements made in her paper, married women engaged in industrial and professional pursuits do not practice abortion. The morality among the single women earning their living is high, and statements frequently made that they extensively practice criminal abortion are unwarranted. Our present social and economical standard is largely blamed for "race suicide". The wealthy woman finds it inconvenient to contribute to racial increase; and those who accept for their standard of economic living the gaudy display of possession of the wealthy cannot afford to rear children: hence—criminal abortions and "race suicide" again.

Dr. Roland B. Curtin (5) puts some of the responsibility for "race suicide" on the physician's shoulders. The modern expense for a confinement is high, he says, and young couples of limited material means try to avoid having children on account of the expense involved. He claims that the physician is in a measure responsible for "race suicide" because the fees he charges for confinements are too high—from \$25 to \$250 instead of from \$10 to \$25—as was the case when Dr. Curtin was a young man. He further states that the greatest loss of childbirth is "among the old, influential or rich families; so much so that family after family averages one, one and one half or two children to each couple." He adds that quite recently a census was taken in Wilkes-Barre, Pa., and it was found that in the Seventh Ward, where the wealthiest inhabitants live, there was but a single birth for the six months ending June 30, 1903. In Forty-Fort, where many of the citizens are descendants of the old Connecticut settlers, there was in the same period not a single birth. He further says: "I know of a town in New England with a population of four hundred and fifty persons, among whom are fifty married couples capable of producing children. In this town the school contains a single scholar and no more in sight to be educated." Among other factors of "race suicide" are mentioned physicians' advice to women, teaching them how to remain childless. Last, but not least, of the evils, according to Dr. Curtin, is the hygiene taught in the public schools disseminating information about medical matters.

In the United States "race suicide" is generally ascribed to

the woman's disinclination to marry. The woman here has been scolded for this disinclination by preacher, moralist, sociologist and even President. We are all, or most of us, familiar with the "girl bachelor" in this country, who heedlessly continues in her chosen social condition—heeding not in the least the chiding of "race suicide" alarmists. No sooner do we become ready, however, to believe that woman is the sole cause of "race suicide" than we are astonished by the piercing of the ray of a newer light on the subject, showing that in England the man bachelor is responsible for "race suicide." Indeed, the man bachelor in England is considered so obdurate a subject in his determination to remain a bachelor that the daily press there, or at least people who give their opinions in the daily press, consider it useless to argue the matter with him, and suggest polygamy as the only hopeful measure for counteracting "race suicide."

According to reports we have here (6), these significant words were published in the English press: "In plain English, there is in England at the present moment a 'sex famine,' which, unless the ladies are exported in millions, is likely to increase rather than diminish," etc.

Summing up what is being said regarding the cause of "race suicide," it appears that it is difficult to find any coordination between them as they are given by the various authorities. Thus, we are told that the following are some of the causes:

1. Education of women.
2. Lack of education of women.
3. Poverty (high death rate among children).
4. Wealth.
5. Limited material means attended by ostentation and envy.
6. Ignorance of medical matters among women.
7. Knowledge of medical matters culled from the books on hygiene during school life.
8. Woman's unwillingness to marry.
9. Man's unwillingness to marry.

It seems useless to further tabulate the causes of "race suicide" as presented by various writers. The few studies here quoted are quite sufficient material for examination. The most striking feature of all the studies quoted seems to be that their respective authors do not seem to convey any exact idea as to the object matter of their discussion. This prevents the reader's following their arguments. Thus, these authors speak of "race suicide" as of a new and startling phenomenon of our

age—the majority of authors heaping abuse and insult on our civilization, pointing at it as the greatest enemy of race procreation, etc.

Now, there is no prettier sight than that of a scientist hurling insult at civilization and abusing woman for not bringing as many children into the world as possible, telling his country that unless woman shuns this civilization and resolves to be a “happy mother of a large family” and that unless she, “like Sarah, a biblical character” can always be “found in her tent”—race suicide will triumph, and the country’s government will pass into the hands of the foreign element in this country (*vide* Dr. Curtin’s paper above quoted). Such speeches are most elevating and appeal particularly to our senses poetic and patriotic.

When we allow these feelings to subside, however, and look at the grave peril under consideration in a calm manner, we are confronted with the other set of opinions already alluded to—showing that in other countries than our own it is man who chooses to enact “race suicide”—not woman. Besides, a further search reveals the fact that a large number of the sturdiest physicians of all countries unite in the outcry *against* prolific marriages among certain subjects and go so far as to recommend governmental interference, for the avowed purpose of preventing a large number of marriages among certain invalid subjects. This particular outcry against marriage among certain subjects will be considered later. For the present it seems timely to remark that those who are alarmed by “race suicide” seem to leave out of consideration the fact that “race suicide” is not at all a peculiar visitation of our era. “Race suicide” has existed from time immemorial—even among savage tribes. A cursory examination of any work on sociologic anthropology will demonstrate this to be a fact. See, for instance, Letourneau’s last work (7) and Enrico Ferri’s work (8). Economic conditions have always forced every individual to provide first for himself—and then to consider whether he could afford to bring offspring into the world. Paucity of food brought about the general practice of abortion among savages. Some Africans kill their twin children and drive the unlucky mother from the house. Some tribes hold orgies on the occasion of infanticide, and an instance is related wherein a mother who tried to rescue her child from the hands of death was thereafter ostracized, and stigmatized with a title considered dishonorable—that of “child-bearer” (8).

Hence, our poor civilization is not quite as much to blame as are the foolish men who waste paper and ink on writing mislead-

ing statements. Civilization is not responsible for "race suicide." The latter has existed and exists wherever human society has existed or exists. In China, according to the well-known Chinese woman physician, Dr. Yamei Kin, every mother is compelled by national custom to nurse her child until it is three and one-half or four years of age. If the mother becomes pregnant before her last child has reached the stated age—her husband is chastized on a public square for having been "unfaithful." Under these conditions, the number of children born in any given family cannot be numerous, and "race suicide" thus seems to me to be enforced in a fashion peculiar to itself.

It seems, then, that there is a strong tendency in every society, whether savage or so-called civilized, to avoid bringing into the world too large a number of children. While superstition, custom or cupidity seem to be the outward motives of the respective nations in keeping down the rate of child-birth, the real regulating factor seems to be nature herself: nature does not intend to cause suffering by overcrowding, underfeeding, and the dread consequences thereof. At the bottom of all causes of "race suicide" seems to be the dread of parents or potential parents to face the awful moment when their offspring ask: "why have I been born?"

The pitiable lot of the poor makes every honorable man wish that there were fewer children per family, and consequent lessened misery for every one of its members; the excessive luxury of the wealthy destroys the manliness of a large percentage of the few children that do happen to be brought into the world. Dr. Curtin (9) admits that "the children of the rich, who, petted, mentally and physically emasculated, selfish and conceited, are poor material for the first rank in either war or peace."

In the light of these disclosures, it becomes somewhat difficult to understand the inconvenience or calamity, as some consider it, of a decreased birth rate. Particularly does this subject of lamentation become incomprehensible in the face of the fact that "race suicide" has always existed—among all nations and under various civilizations.

Statistics show that to-day there is a decreasing birth rate in all countries, the difference being only that of degree. Thus, about the time of the Great Revolution, France had a population of 25,000,000; to-day it has only 38,000,000—a gain of 50 per cent. During this period, the population of Great Britain, notwithstanding the heavy drain of emigration, increased from 12,000,000 to 40,000,000,—a gain of 240 per cent.; that of Germany, from 15,000,000 to 55,000,000,—a gain of 270 per cent., and

that of Russia, from 25,000,000 to 100,000,000,—a gain of 301 per cent.

The current annual increase in the population of France by excess of births over deaths is only about 30,000; that of Great Britain, 325,000; that of Germany, 500,000. The French census of 1899, shows that the gain in the population is now only one-fifth of one per cent. per annum. The births for the census year exceed the deaths by only 31,000, against 33,000 in 1898; 108,000 in 1897 and 93,000 in 1896 (10).

A more recent report on the decreasing birth rate in the United Kingdom is contributed by D. Walsh (11): "there has been a fall in the total birth rate of the United Kingdom during the past half century, with little change in the marriage rate. The fall affects both legitimate and illegitimate births. The fall of the last 30 years was preceded by a proportionate rise during the 30 years before, which may have been due to a wave of national prosperity subsequent to free trade. The fall may be due to the maximum limit of supportable population having been reached, to the increasing tendency to postpone marriage, and (in minor degree) to artificial prevention among the better-to-do classes. The tendency among the patrician classes has always been towards lessened fertility. Increased celibacy must be taken into consideration, as well as the frequency of divorce and the constant drain of soldiers and sailors. There is no trustworthy evidence to show that prevention leads to grave physical and moral evils in parents or the non-prevented issue of such marriages," etc.

From the above quoted statistics it appears that much of the basis of "race suicide" talk is found in the selection statisticians make of the progress of the birth rate of a special period of a country's development—when the birth rate is quite high—as a standard with which birth rates of different periods of other nations are compared. To fully grasp the meaning of the statistics quoted above, therefore, it is well to analyze them in their proper relative positions.

Leaving the birth rate in Russia aside for special consideration, what meaning attaches to the birth rates in Great Britain and in Germany respectively? During the periods here considered both countries were in process of formation. As every one knows, during such periods, characterized by new colonization and expansion, the formation of family ties and rearing of large families is one of the greatest conveniences for social and industrial progress. The high birth rate decreases, however, as soon as the novelty of surroundings and social non-restriction wanes. This condition is fully demonstrated in

countries of new formation, where the high birth rate was remarkable even most recently as, for instance, in Australia; thence comes the latest tocsin, as follows:

"The birth rate in the New South Wales Metropolitan area, that has been decreasing from about thirty per thousand in the year 1894 to between 25.5 and 26.5 in the last three years, shows at present no increase. The births relatively to population are much lower than the rate for July during the last ten years" (12).

As regards the high birth rate in Russia: Prof. Antoine Marro (13) gives an instructive exposition of data regarding the age of marriage in various countries. In Russia, the percentage of subjects marrying under twenty years of age is 32.01. This high rate of young marriages stands alone in the list as compared with similar percentages in other countries. The minimum percentage is 0.02, in Saxony (1887-1891) and the next nearest maximum is 2.97, in Holland (1887-1891). The percentage of marriages between 25 and 30 years of age is 6.94 for Russia; the maximum percentage is for Sweden, 31.37; in Scotland it is 25.67 (1887-1891) and in Massachusetts it is 23.19 (1886-1890).

Explaining the percentages that he gives in detail for sixteen countries, Prof. Marro says: "The peoples furnishing the largest percentage of young marriages are either those with highly developed sentiments of individual liberty and independence, as in England and the United States, or those subjected to absolute autocracy, as in Russia. The difference between the two is obvious nevertheless—the free countries furnishing the largest percentage of marriages between the ages of 25 and 30" (14). He further states that in Russia the young subject as yet unfit for marriage or procreation receives his wife from the hands of his parents and in his precocious embarrassment loses the vigor of youth and often reaches such a degree of servility as to accept domestic and economic oppression without question. Guglielmo Ferrero is quoted as saying that the employer lodges and boards his workingmen, regulating the day's routine by the sound of the gong, indicating the hour of rising in the morning, the hour of commencement and cessation of labor, the hour of meals and retirement, forbidding even recreation in any other than the prescribed manner (15).

Prof. Marro treats in a masterly way of the evil consequences of early and excessive sexual indulgences. "Autocratic governments", he says, "utilize this knowledge to fortify their own existence. The Jesuits of Paraguay, who found marked convenience in holding in subjugation the Indians among whom they worked as missionaries, caused their victims to be awakened at

midnight—by the sound of bells—and invited them to *propagate* (16).

From what precedes it seems that a high birth rate without some definite qualification is an unknown quantity that should be well scrutinized before it is accepted as a desirable national feature. In fact, a high birth rate seems rather an exception serving to vary the usual and logical birth rate rhythm.

Prof. Marro tells us that it is a grave sacrifice for a family or individuals to renounce the joy of procreation (17). If, therefore, families or individuals stand ready to sacrifice the joy of procreation because they feel unequal to the sacred task, is it either right or just for any one to condemn their course of action?

It is always well to consider any given proposition from all points of view. We have seen the invalidity of the point of view of those alarmists who consider "race suicide" as a special and evil visitation of our particular era and civilization. The broader, calmer and more judicious observers inspire the reader with more confidence regarding the significance of "race suicide" and furnish more material as well as useful data over which to ponder. Thus, speaking of the various factors in the causation of "race suicide," Dr. Inez C. Philbrick (18) says: We "maintain a standard of sex relationship consistent only with barbarism. We make merchandise of the bodies and souls of a half million of our women. Venereal diseases in a majority of the adult male population (for the prevalence of gonorrhœa is placed by competent authority at 80 per cent.) exact tribute in health and happiness of themselves, their wives and, in the case of syphilis, of their children and unborn generations".

It is further stated in the paper just quoted that we have a million defectives in our hospitals and charitable institutions; that according to Gihon, there are 2,000,000 active syphilitics in the country and that the number of chronic alcoholists is far greater (19).

"It should not be extolled, nor even admitted ethical, for a woman to bear a large family if it entails sacrifice of the precious heritage of *living*, most certainly not if children be ill-born or handicapped in opportunity; nor for a man to spend his years in drudgery denying every higher need for their half-maintenance. Limitation of the number of offspring is often a duty, but feticide is *not* its ethical method. Marital, as well as social continence, is a crying need of the hour. Nature, unassisted by man, will in the process of time effect this limitation; but for the diseased and degenerate, it will be through the tragedy of survival of the fittest. Nervous energy expended in intellectual and moral activities will lessen the number while improving the kind of offspring" (19).

In his masterful "Presidential Address", Dr. Alder Blumer (20), speaking of the prevention of insanity, says that it is

encouraging to notice that the lay press has taken to educating the laity on the subject of insanity and marriage, pointing out that prevention is the chief end of all medicine. He further adds in part: "The making of human life is as serious a matter as the taking one. Men and women do not realize how much insanity is multiplied in the land by natural increase by birth" (21). He also says that according to Dr. A. W. Wilmarth, Superintendent, Wisconsin Home for Feeble Minded (*Proceedings of the National Conference of Charities and Correction, Boston, 1902*) "the tendency in degenerate families is to rear a larger number of children than in those of average intelligence. 'Large families are found among all grades of society, but investigation seems to indicate that the higher the mental training of the parents, the less numerous the family, as a rule'. And Kiernan has shown that the average number of children in ninety degenerate families, which he had observed, was eleven; while multiple births occurred more than ten times as frequently as in the population taken as a whole. Thus it appears that while nature tends to check increase in the case of gross bodily infirmity, it is otherwise where only the higher faculties are involved in the degenerative process. And in these days, when presidents of republics and of universities and emperors are exhorting to marriage and singing paeans to frequentative maternity, it is well that they ponder these things. Moreover, men and women of feeble intelligence are notoriously addicted to matrimony and by no means satisfied with one brood of defectives" (22). A case is then cited of a defective who, in the course of examination, said to Dr. Blumer: "she is my fourth wife, and I am her fifth husband".

Dr. Blumer concludes by saying that Legislatures "should enact laws looking to the effective prohibition of the marriage of the unfit". He quotes Dr. M. W. Barr, of Elwyn, Pa., who says: "'After all, there is a good deal of sentimentality and false modesty in the repudiation of the idea of laws controlling increase. We simply seek for the helpless, ignorant, irresponsible, what the wealthy and indolent do for themselves'".

Coming from the pen of so honorable a man and able a physician as Dr. G. Alder Blumer is, these statements should be given careful consideration; they show that he is an excellent clinician and keen observer of psychiatric facts. Besides, he does not stand alone as an advocate of restricted procreation. Dr. Barr, who has been quoted, and many other psychiatrists of high standing the world over, are trying to bring about a system of restriction. Prof. Marro, also, states that degenerate men and women are notorious for their exaggerated sexuality, because

degenerates are essentially instinct-individuals. They retain a vigorous instinct of reproduction without having the force to resist it or to harmonize it with social requirements. One of his patients said to him: "I think that every man has his mission in nature. For my part, I feel that mine is to procreate more than any one else". This patient caused the birth of four sons, of whom one was an epileptic, one insane, one a dyspomaniac and one cachectic. The patient himself died insane (23).

In my own writings (24, 25, 26, 27) I have brought to light similar clinical results. The degenerate families seem to expend most of their energies on the genesic function, their whole lives being punctuated either by numerous abortions (syphilis, alcoholism), or by unusually large numbers of offspring—all of whom, as a rule, are degenerates.

While I am thoroughly in accord with my colleagues as regards their clinical observations, I am sorry to have to disagree with them regarding the proposed enactment of "laws looking to the effective prohibition of the marriage of the unfit". I disapprove of such a law because, if honorably interpreted and brought into effect, all kinds of defectives and moral imbeciles would have to be forbidden by law to enter the married state. The application of the law would be justifiable but practically impossible of application; for one thing,—we have so many moral imbeciles who occupy the highest possible positions (28). Most of us are familiar with "the weak-kneed, the weak-backed, the sycophants, the administrationists, the toadies, the affiliates of the powers that be, the office holders, the profit-sharers of gains wrung from the bodies and the backs of the unfortunates." and others who "stand forth before the awakened intellect of this generation and plead for the continuance of that which is bad, of that which is secret, of that which is oppressive, of that which hides itself under the cloak of authority, of pompous dignity, of official immunity, of social exclusion and of profit-sharing collusion and combination" (29). If we were to enact laws as proposed it would become our particular duty to segregate and prevent marriage among the numerous moral imbeciles of the category just mentioned. For, as every honorable psychiatrist will readily admit, the overwhelming functional and organic harm done to society by these moral imbeciles can hardly be calculated. Although their actual pathologic condition is not generally understood, the clinician and psychiatrist know that these moral deficiencies are as certain indices of moral perversion and actual psychic invalidity as are the conditions that manifest themselves in the moral stupor of imbecility or in the de-

linquency of common criminality. By their deeply diseased senses they infuse and instill moral perversion and degradation not only into the psyche of their own offspring—as is the case with simple pauper imbeciles—but also into every member of their society who is either their dependent or adherent. A segregation by legal process of such defectives, however, cannot be practiced at the present time. And if such harmful moral imbeciles cannot be brought under legal restraint, it would not at all be fair for us, psychiatrists, to labor for the enactment of such laws as are sometimes proposed.

To revert to the subject-matter of this paper,—the evils of “race suicide”,—it appears that the great social evil lies not in the reduced birth rate, but in an overproduction of births that are useless, costly to the State and dangerous to society. This overproduction is apparent among the poor and the rich alike. The poor furnish the country with 1,000,000 defectives for our hospitals and charitable institutions [it is not stated whether the 91,000 or 100,000 insane are included in this number (30)], the rich furnish the children who “are poor material for the first rank in either war or peace” (*l. c.*, p. 4. 483) and the community in general is furnishing a population of which “venereal disease in a majority of the adult male population exacts tribute in health and happiness of themselves, their wives, and in the case of syphilis, of their children and unborn generations” (*l. c.*, p. 489). According to Gihon, “there are 2,000,000 active syphilitics in the country”, and “the number of chronic alcoholists is far greater” (Dr. Filbrick, *l. c.*, p. 490).

With these data facing us, can we ignore the stern, judicious utterance of Dr. Alder Blumer that “the making of a human being is as serious a matter as the taking one” (*l. c.*, p. 13).

Dr. Blumer does not stand alone in this opinion. I have had occasion to hear some responsible men of the highest standing in this and other countries say the very same thing in the same identical words before Dr. Blumer published his report, and there are many more thinking men who are of the same opinion—even if we do not see it published at large. From all sides we are reminded of the fact that a great responsibility hangs over the persons who bring children into the world. The philosopher, the student in sociology, the psychiatrist and the men who do their thinking without having a professional title to their names, all agree on this point.

Although an enthusiastic adviser of marriage and an admirer of numerous families, Prof. Marro (*l. c.* p. 521) vigorously insists on the regulation of birth rate. He says: “we take so much

trouble to ameliorate the breed of horses, cows, dogs, etc., why should not Legislatures turn their attention to the amelioration of the generation of man, on whom depends the future welfare of society" (*l. c.*, p. 521).

I have already expressed my opinion regarding the interference of law in the matter of genesic function, and while I esteem most highly the opinions of the distinguished psychiatrists whose names have been mentioned here, I do not see how such laws can honorably be applied to all alike. Besides, the reading of the arguments adduced here does not at all furnish any definite information as regards the question of regulating marriage to the best advantage of the individuals or the State. Prof. Marro (30), for instance, tells us:

1. That marriages at an early age go hand in hand with political, religious and moral servility (*l. c.*, pp 506, 524).

2. That marriage at the age of greatest virility and economic validity, as is practiced by the English and Americans, is most desirable (*l. c.*, p. 526).

3. That the Latin male population loses the vigor of its early manhood in precocious lascivious life, acquiring the force and virtue necessary to face the responsibility of married life at a later period than does the English and American (*l. c.*, pp. 526-527).

4. That in part, at least, the tenaciousness of the Jew and the high level of his intellectual and economic potentiality are due to his marrying at an early age (*l. c.*, p. 522).

If, then, early marriage is bad for the quality of the race procreated, as seen in Russia, marriage at mature age should be good for the race procreated. But concomitant loss of virility in lascivious life, for the Latins, and the existence of some 2,000,000 active syphilitics, and 80 per cent. of the adult male population infected with gonorrhea in this country (4) seems also to point to wasted virility. Does this not indicate that marriage at mature age is also bad for race procreation? And if marriage at an early age is conducive to servility among Russians, why is it conducive to a high standard of intellectual and economic virtues among the Jews? And if early marriage is bad, and marriage at adult age is bad and marriage late in life is bad, at what age is marriage to be advocated?

The light in which the question of marriage appears seems to indicate that we ourselves have not studied the subject deeply enough to be in a position to give advice on it. While there is some foundation in the suggestion of psychiatrists to enact preventive medicine through legal channels, it is a question whether

any real virtue would attach to such preventive medicine. As matters stand, however, such preventive medicine would appear to be a sort of premature burial of subjects who would have every qualification for survival if preventive medicine were correctly understood and properly enacted.

The greatest part of human energy is devoted to genesic function. Parents who give birth to the largest number of offspring seem to utilize this energy in the least profitable manner (idiot and imbecile children, epileptics or other degenerates). This waste is principally due to the fact that nations have not yet elevated the energy of genesic function to the dignity of an energy. Other energies known to us, even of the meanest grade, have long since been wisely utilized and their activities based on the principle of the strictest possible economy. This economic utilization has been brought about not through any enforcement of legislative restrictions, but through steadily progressive human intelligence. Economic handling of genesic function will, like the economic function of other energies, come about through a steady and progressive intellectual development of nations.

In the near future, I hope to consider some points regarding the economic utilization of the genesic energy.

New York, October, 1904.

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THE JOURNAL OF MENTAL PATHOLOGY.

Edited by LOUISE G. ROBINOVITCH, B. ès L., M.D.

VOL. VII.

1905.

No. 3.

STATE PRESS, PUBLISHERS,
NEW YORK.

MSS. and Communications should be addressed to the Editor,
28 West 126th Street, New York.

Address bulky mail matter to P. O. Box 1023, New York.

This Journal is published bi-monthly, except in August and September.
Price of subscription, \$2.50 per annum. Single copies, 50 cents.

Original researches and other MSS. will be carefully considered, and if found unsuitable will be returned, if accompanied by stamped, self-addressed envelope.

ON THE DISEASES OF SLEEP: CRIMES COMMITTED DURING SOMNAMBULISM.

DR. BIAUTE: During sleep the various functions of the organism are variously suspended. The organic functions continue in a decreased state. The functions of relation undergo a more marked interruption. The cerebral functions properly speaking are unequally modified. Memory and imagination are prone to exaltation, whereas attention, reflection and will are dormant during sleep. Forgotten memories are revived but are deformed and exaggerated. Vague sensorial impressions are followed by disproportionate sensations and notions of time, space and persons. Brown-Séquard's theory of reciprocal reaction of the nervous centres explains the manifestations in certain forms of pathological sleep. The overtaxed centre of memory may communicate excitation to the motor centre and noctambulism or dream of action may result. When this excitation is more marked, the sensory organs may also be brought into activity—the general sensibility remaining completely abolished. Under these conditions we have a somnambulist: in complete darkness he dis-

tinguishes the minutest objects relating to his dream, showing the most exquisite activity of the sensory organs, touch, sight, etc., while his general sensibility remains obtuse—irresponsive to the rudest pricking, etc. A more marked excitation may bring the intellectual faculty into play: the subject can talk, act and reason as if he were in a normal state, but his will remains paralyzed,—the subject being nothing but an automaton directed by sensorial impulses that are followed by amnesia during the wakeful state. This condition is called by Carpenter unconscious cerebration. A perfect type of such cerebration sometimes follows epileptic vertigo. In lethargy, on the contrary, cerebral activity is completely abolished, while the somatic functions only continue. The latter may become so reduced, however, that the subject may readily be considered as dead. Some lethargic patients wake up suddenly and return to the normal condition. This seems to indicate that the trouble is due to general inhibition of the nervous centres but not to a material lesion. The most remarkable case of lethargy of recent years was that of Bébeth: she fell into lethargy when she was about to be arrested as a suspected infanticide, and remained in that condition for twenty years. Dr. Gilles de la Tourette studied her. During the entire period of twenty years, she remained apparently lifeless, cadaveric and emaciated. One day, she opened her eyes and moved her lips for the first time in twenty years, saying “you pinched me.” Her eyes then closed and she died. In catalepsy cerebral function is abolished but the centre of motility is active. In lucid lethargy the senses and consciousness persist but the muscles are flaccid, paralyzed. In such cases the subject, taken for dead, is a witness to all the preparations of his own funeral, the most violent emotion alone helping him cry out in terror against being buried alive. Concluding these generalities, the author relates an unusual case of somnambulism, during which the subject committed murder. Complete amnesia of the accident followed during the wakeful state, but the author succeeded several times in evoking the memory of the act during hypnotic sleep (*See Journal of Mental Pathology*, Vol. VII, No. 1, p. 27).

PERNICIOUS EFFECTS OF ALTERNATING CURRENT OF HIGH VOLTAGE.

Dr. Millener has been consulted by some employees of the great electric power houses of the Niagara frontier and finds that these patients suffer from peculiar disturbances that he ascribes to some unknown element or factor due to the electricity in the air in those places. He says that continuous employment in the im-

mediate presence of electric generators or transformers, where the air is continuously and heavily charged with electricity or some element caused by electricity of high voltage results in digestive troubles. The patients so employed lose their appetites, their complexion becomes almost chalky and there is pain and distress after taking food. They are often obliged to go away on vacations in order to become able to digest food in a normal manner (*Buffalo Medical Journal*, July, 1905).

PROFESSOR TAMBURINI TO FILL THE CHAIR OF PSYCHIATRY AT THE UNIVERSITY OF ROME.

The chair of psychiatry at the University of Rome is to be filled by Professor Tamburini, of Reggio-Emilia.

Professor Tamburini is one of the best known psychiatrists in Italy. As Director of the leading Psychiatric Hospital for the Insane and Institute for research into the nervous system, at Reggio-Emilia, he has gained for himself world-wide fame. Indeed, the high standard of that model hospital and Institute is due to his untiring efforts. Besides the reforms introduced by him into the largest institution for the insane in Italy, he is also responsible for the founding of the *Rivista Sperimentale di Freniatria*.

The University of Rome is to be congratulated on the good choice made by the Ministry of Public Instruction in the matter of selecting Professor Tamburini to fill the chair of psychiatry.

PAPERS READ AT THE V-TH INTERNATIONAL CONGRESS OF PSYCHOLOGY.

HELD IN ROME, ITALY, APRIL 26-30, 1905.

Sense Disturbance Following Extirpation of the Columns of the Spinal Cord in Dogs.—DR. V. DUCCESCHI describes the technique of the operation. Ablation of Goll's column is simple as compared with that of Burdach's column. In the latter case complete ablation cannot be performed without encroaching on the gray substance. The ablation can very well be performed on one side only. Four dogs were presented in which unilateral and bilateral ablations had been performed, comprising lengths varying from 3 to 11.5 centimeters. In one dog, that had sustained quite an extensive bilateral ablation, it was observed, 2-4 weeks after the operation, that the posterior limbs were almost immobilized or rigidly distended. When attempting to walk, the animal dragged its posterior limbs, the dorsal surfaces of which were often turned downward. As soon as the animal regains the power of locomotion, grave ataxic symptoms

are immediately observed in the posterior limbs: there is either exaggerated or defective raising and lowering of the limbs, exaggerated abduction and adduction and time discord in walking, accompanied by alternate hypertonic and atonic attitudes. Some two weeks after the animals commence to walk these disturbances become somewhat attenuated, but persist indefinitely after that time. The animals in question have been under observation for four months. The ataxic disturbances become exaggerated in running, walking upstairs, etc. Muscular force is decreased, the animal becomes readily tired and exhausted: there seems to be difficulty in sustaining the weight of the body with the posterior limbs.

During the first days after the operation there may sometimes be general hypoaesthesia above the line of operation. In one case, dolorific and tactile hyperaesthesia was observed. During the second period,—when the animal can walk on the posterior limbs,—the simple tactile reflexes are in good condition. The tendon reflexes are somewhat impaired. Dolorific sensibility is decreased in the posterior limbs as compared with that of the anterior limbs; and although it is difficult to analyze the tactile sensibility in the dog, it is easy, nevertheless, to find that this sensibility is unimpaired in the posterior limbs and perhaps the same as in the normal side of the body. The most potent lesion of sensibility, the one persisting permanently, as explained, is the impairment of the muscular sense: the animal does not correct the abnormal positions given to the posterior limbs, or at the most, the correction is only imperfectly made.

In two cases were observed quite marked zones of complete anesthesia on one side of the body, somewhat above the line of operation; the disturbance was probably due to a radicular lesion caused during the ablation of the columns of the spinal cord.

When the ablation is unilateral, the disturbances are at first bilateral, but later are in great part reduced to the disturbances of the operated side only.

The results of these experiments lead to the conclusion that in the whole of Goll's and at least in the most inner and dorsal part of Burdach's columns the tracts of muscular sense are prevalent to the greatest extent without decussating in the greater part of their length. On the contrary, the tracts for dolorific and tactile sensibilities are either absent or rare in these columns. These results agree with those found by other observers with different experiments.

On Some Disputable Points Regarding the Physiology of the Cerebellum.—PROF. M. L. PATRIZI said that although

energetic discussion regarding the physiology of the cerebellum had been going on for the last hundred years the question of its physiological function was not yet positively clear. One of the disputed points in connection with ablation of the cerebellum in animals is hypotonia alongside with "allure de coq." Luciani has pointed out several facts in support of the muscular hypotonia; Ferrier and Monakow have presented facts denying its relation, and Lewandowsky so explains the muscular relation that it differentiates it from pure atonia. This diversity of opinions has led the author to study the question graphically, obtaining tracings of groups of muscles and single muscles on the healthy side and that corresponding to the extirpated cerebellum. Although he has obtained, by means of his special technique, tracings showing that there is decreased muscular force on the side corresponding to the operation, doubts whether this decreased muscular force is due to a true defective sthenic influence of the cerebellum; he inclines to the belief that the decreased force is due to impaired tonicity. This theory has been advanced by Luciani himself, who had previously advanced the idea of sthenic function of the cerebellum. A third point of controversy touched on by the author is that regarding the re-enforcement by the cerebellum of impulses sent by the cerebrum to the voluntary muscles. With experiments and tracings he demonstrates that there is reason for the supposition that cerebellar titubation may be looked on as a direct result of muscular hypotonia. He thinks, with others, that it is not at all necessary to look on the tremors and oscillations as absolute consequences of absence of special cerebellar function destined to be added to the elementary physiological stimuli coming from the cerebrum. The author also touched on other points regarding the function of the cerebellum.

Specific Characteristics of Passion—PROF. TH. RIBOT divides human sentiments into three principal groups: 1, the affective states properly speaking that express our appetites, inclinations and desires that are inherent to the psycho-physiological organism of man. These states characterize normal life, preoccupying consciousness feebly or to a medium intensity. 2, emotions, characterized by abrupt and violent disturbance of the psychic equilibrium (fear, anger, amorous outbursts, etc.). These are reactions of the innate mechanism or manifestations of nature. 3, passions are creations of man. Animals, children and primitives have impulses, outburst, but not passions. The first characteristic trait of passion is *idée fixe* that constitutes their nucleus. The discussions regarding the affective or intellectual nature of a

fixed idea does not influence the present subject. It is evident that an *idée fixe* becomes a passion when it englobes sentiments and tendencies to act. The second characteristic of passions is their intensity (love, gambling, etc.), in which wishes manifest themselves as acts and show no tendency to satiation. In static passions (hatred, cupidity, cold ambition, etc.), the intensity exists in a state of tension, incubation, often under the form of arrest of motion. The third characteristic is their duration. Even the shortest passions are of far longer duration than are pure and simple emotions. The difference between passion and emotion is like the difference between the acute and the chronic. Kant expressed well the difference between emotion and passion: "emotion is like the water that breaks through its dike," while passion is like a torrent that eats into its bed more and more profoundly."

Influence of Geographical Surroundings and Heredity of Acquired Characters on the Evolution and Involution of Peoples.

—DR. A. MATTEUZZI does not accept Spencer's views regarding the evolution of peoples. According to Spencer, hereditary evolution is too strictly ascribed to the struggle for existence. According to the author, on the contrary, the influence of geographical environment is most potent in the process of hereditary adaptation. Spencer considers that when a psychic variation appears, it is fixed by heredity. The author holds, on the contrary, that psychic variations appear as consequences of geographical environment. On the basis of this reasoning, the author believes that the future of peoples can be foreseen according to the physical and tellurgic conditions of the countries in which they live. The decadence of peoples is then demonstrated to have been the result of geographical surroundings. The same geographical influence that creates the heredity of acquired character and shapes psychic development of peoples also leads to the decadence of the same. This is demonstrated by the decadence of various historic peoples. It is further shown that the very assimilation of psychic traits and their perpetuation by heredity become insurmountable obstacles to further assimilation of newer traits when peoples become completely adapted to their geographical environments: the new psychic conditions are moulded to fit the old ones. It follows that geographical conditions play an important part in the evolution of heredity of nations and variety of geographical conditions is the mainspring for evolution of new ideas.

The Fine Structure of the Nervous Fibre in Relation to Its Function.—DR. CARLO BESTA uses a special method of fixation in order to demonstrate that there is a luxurious network

that runs through the myelin sheath of the peripheral nerve fibres. The network is interrupted at the nodes of Ranvier and is probably of neurokeratinic nature. The study of this network in various animals shows that its development differs with the animals, according to whether they can walk and enjoy certain functional independence at the time of birth: this network is found well developed in young chicks and others that are able to walk at birth, while it appears later in dogs and rabbits—that are helpless at birth; besides, in the latter cases the gradual development of network goes on as the animals near the adult period. In rabbits the structure becomes complete towards the 25th day, while in dogs it is only towards the 40th day that the complete development is accomplished.

There seems to exist, therefore, an intimate relation between function and degree of perfection of the fibres. The author is now studying these conditions as applied to various animals and is trying to determine whether general significance attaches to these conditions.

The Field of Distinct Vision in the Insane and in Born Delinquents.—DR. E. AUDENINO reports his experiments on 97 subjects, 29 of whom were normal and 68 in pathologic conditions. In normal subjects there is seldom narrowing of the visual field to a degree that distinct vision is impaired (13 per cent.); in normal children the disturbance is of more frequent occurrence than among adults. In the insane and the born delinquents, on the contrary, there is frequently narrowing of the visual field (61 per cent.). Narrowing of the visual field for white does not always coincide with narrowing of the field for distinct vision. Narrowing of the visual field for distinct vision is found in about the same proportion (77 per cent.) in adult epileptics. Among young epileptics narrowing of the visual field is found in smaller proportions (40 per cent.). In other psychiatric forms (hysteria, alcoholism, paranoia) narrowing of the visual field for distinct vision is found, but not as frequently as in the preceding groups.

Importance of Psychotherapy in the Treatment of Sexual Impulses.—DR. E. BERILLON considers the treatment of these impulses in the young, and says that in most instances the impulses are brought out by suggestion. The latter is particularly powerful because the subjects are in a condition of expectant attention. In all such cases, therefore, the suggested ideas act as if the subjects were highly susceptible to hypnotic suggestion. Hence, the tenacity and fixity of the impressions whether

they are normal or abnormal. Hence, also, the good results obtained from psychotherapy in the treatment of abnormal sexual impulses.

The Rhythm Sense in Primitive Peoples.—CHARLES S. MYERS experimented in the Torres Straits and in Borneo. Lengthy explanations of the disposition of the experiments are given, the conclusions being derived from tracings on a blackened drum. It appears that the special tendency of the Murray Islanders is to quicken in repeating slow rhythm, while the special tendency of the English is to slow in the slow rhythm. Experiments conducted in Borneo show how elaborately the execution and the perception of complex rhythmical variations may be developed among uncivilized peoples.

Hysterical Anesthesia to Fatigue.—H. PIERON reported a remarkable case of a hysterical woman who could press the dynamometer 50 times in succession with both hands, 28.7 kilogs with the right and 27 kilogs with left one, making a total of 1516 kilogs for the right hand and 1346 kilogs for the left hand. Such a record is unusual and can only be explained by anesthesia to fatigue. The patient is an old hysterical subject, having made the rounds of the principal hospitals for the insane. Twenty-four hours after the experiment she felt pain in the hands; the pain continued for two days.

Study of Dreams During a Period of One Hundred Nights.—H. PIERON made a study of his dreams and found that the events of the day preceding the dreams had a considerable influence on the dreams; dreams, however, are often of a delusional character: the understanding of their nature is not as simple as some would have them be. We do not recall all our dreams and it is particularly difficult to remember dreams occurring during profound sleep. A table is given showing how often the various sensibilities and given ideation are brought into play during dreams.

Contribution to the Study of the Psychology of the Blind.—A. KROGLUSS: 1. Impressions of taste are less marked in the blind than in those with good eye-sight. 2. Study by heart of poetry, words, etc., is more difficult for the blind. 3. The words implying sight-impressions have an emotional influence on the blind. 4. The representation images of hearing are better developed in the blind than those of taste. The lack of external impressions through sight is complemented in the blind by impressions of the other senses.

An Attempt to Determine the Physiological Concomitance of Pleasure and Pain.—DR. MARIO GOVI presents a plausible theory of special centres for pleasure and pain: centripetal currents of pleasure cause chemical integration in the nervous system. Pain or cessation of pleasure is accompanied by disequilibrium of the energies of the psychic centres and expenditure of nervous energy characterized by chemical disintegration.

Limits of Physiological Tolerance to Heat and Cold in Circumscribed Areas of the Skin.—DR. MARCO TREVES finds that it is impossible to determine this limit as regards cold, because cold acts as an analgesic at a freezing point. The limit of this tolerance to heat varies between 45 and 50 degrees C.

The Appreciation of Time in Children.—DR. IDA FAGGIANI finds that children, like primitive peoples, first form notions of the seasons before they do those of years, months, weeks and days. The notion of the hour of the day is intimately connected with physical stimuli of the digestive apparatus.

On Latent and Synchronous Thought.—DR. CESARE RIVERA holds that two or more different thoughts may be synchronous in the same person, although consciousness does not reveal the same. This is one of the psychic phenomena that have not yet been adequately explained.

TRANSLATIONS AND ABSTRACTS OF CURRENT LITERATURE.

A Rare Case of Reflex Epilepsy.—DR. OUSPENSKI: A girl, 17 years of age, had been subject to epileptic fits beginning with her first menstrual period, when 14 years of age. The attacks took place at the time of every menstrual flow. A thorough examination showed that it was not hystero-epilepsy. All the organs, except the genital apparatus, had been examined and found normal. The usual bromide treatment proved useless. When 19 years of age, the patient married against the advice of the author. Married life brought her no relief: the attacks continued to take place the first day of menstruation. The genital apparatus was now examined and found perfectly normal. The patient had been invited, however, to present herself for an examination three days before the onset of the menstrual flow. At that date, the entire genital apparatus was considerably engorged: the ovaries were large and sensitive, the uterus and vagina were engorged and the external genitals were red and distended. The patient had a fit in the author's presence, and he was now con-

vinced that the epilepsy was genuine. He then scarified the uterus, drawing a tablespoonful of blood; the same operation was repeated the next day, and on the third day the flow set in—without there being any convulsive attack. There were no attacks between the menstrual flows. Before the following menstruation the patient was again subjected to bleeding from the neck of the uterus during three successive days. The flow set in for the second time without any epileptic attacks. For seven successive months the patient presented herself for examination four days before the onset of the flow, the organs were found engorged as on the first examination, sacrifice and bleeding was practiced, drawing one half ounce of blood each day, and the menstrual flow was accomplished normally without any epileptic attack. The author now decided to omit the usual preventive bleeding but, in order to avoid any psychic effects on the part of the patient, he pretended to perform the operation as usual when she presented herself for the usual scarification. The operation was usually painless, and the patient did not suspect the author's test. She submitted to the operation during three successive days, as usual, and when the flow set in on the fourth day there was a severe epileptic attack. According to the family, the attack had been more severe than any of the previous ones—before the treatment had been instituted. Before the succeeding flow the bleeding was performed during three successive days preceding the onset of the menstrual flow, as usual, and there had been no epileptic attack. The author then suggested the use of mustard and hot applications to the abdomen, to replace the bleeding. This the patient refused to do, preferring the old treatment. There were no attacks as long as the bleeding was performed as indicated. The author then had to absent himself, and referred his patient to a colleague. The patient refused to go to a new physician and had epileptic attacks accompany every menstrual flow. In the absence of the author, she finally decided to resort to hot applications and mustard poultices. This brought her relief, and there were no epileptic attacks with the menstruation.

The author does not know of any similar cases of epilepsy that could unhesitatingly be called *reflex epilepsy* (*Vestniff Doushevnich Boleznei*, No. 5, 1904).

On Experimental, Secondary, Hypertrophy of the Pituitary Body. Contribution to the Study of the Pathogenesis of Acromegaly.—DR. GUIDO GUERRINI: The history of acromegaly in medical literature is carefully traced. Marie's conception of the pathogenesis of acromegaly is accepted by the

majority of neurologists; many cases have been published, in which acromegaly is ascribed to lesions of the pituitary body. The author's experiments lead him to think that the lesions of the pituitary body are secondary in nature. This opinion is supported by the fact that the pituitary body was found normal in many cases of acromegaly. He admits that under the conditions in question the gland may remain intact under various circumstances: the condition of the gland itself, a non-advanced stage of the disease or when there is compensatory function by a gland similar to the pituitary body. According to some authors, the thyroid gland and the pituitary body may supplement each other's function. The author's own experiments lead him to accept this opinion. He applies his findings, however, in a way different from the accepted one. According to him, lesions of the pituitary body may be secondary. This is demonstrated by numerous experiments on animals. His experiments cover intoxication with endogenous as well as with exogenous agents. For the latter he used diphtheritic poison, for the former—tying of the intestines or the biliary duct. The serum obtained from the infected animals was then injected into healthy animals. He concludes from these experiments that there is no material difference between the effects of the endogenous and exogenous poisons on the pituitary body. In some cases intoxications caused hyperfunction and in other—hypofunction of the pituitary cells. Anatomical details of the experiments are given. Generally speaking, endogenous or exogenous infection excites the function of the pituitary body. If the irritation is of long duration, hypertrophy and hyperplasia in the parenchyma of the gland follows. The author concludes by saying that the notions of the relation between pituitary body and acromegaly should be adjusted in face of the experimental results obtained by him. There is a similarity, he says, between the opinions of those who consider auto-intoxication as a cause of acromegaly, and his own opinion regarding the effect of intoxication on the pituitary body. On an average, the intoxication of the animals lasted 90 days before the glands were analyzed. In acromegaly, of course, the intoxication lasts much longer.

The metabolic changes in subjects afflicted with acromegaly are considered of importance. They should be studied. Glycosuria has been found in a large number of cases, but it was not found what particular organ, other than the gland, was affected. Hemoglobinuria has also been observed, but we have no definite studies of such cases (*Rivista di Patologia nervosa e mentale*, November, 1904).

Problems and Theories Relating to Sleep.—DR. CLAPAREDE says that up to the present time sleep has been considered from the exclusive point of view of an immediate physiological mechanism, but that it seems to him that a biological basis underlies the phenomenon. A number of observations, that cannot be explained by the classic notions of sleep, support his point of view. Infusoria, for instance, do not seem to sleep; Hodge and Aitkins observed the *Vorticella gracilis* uninterruptedly during 21 hours, and declare that this animal does not rest or sleep, that the cilia kept on their motion throughout the observation. Sleep is not always proportionate to fatigue or activity. Birds, for instance, are exceedingly active, perform a considerable amount of work, but sleep very little. According to Brehm, the longest day is too short and the shortest night is too long for them. All birds wake up early in the morning and are awake several hours during the night. Some birds can keep on flying several days in succession when at sea, without resting and consequently without sleeping. The author is of the opinion that sleep is an active and positive function, but not a consequence of organic exhaustion. Under normal circumstances sleep precedes exhaustion and often exhaustion produces insomnia. Sleep is, therefore, a function of defense, an instinct that induces inertia in order to prevent excessive activity that would end in exhaustion: we sleep not because we are intoxicated or exhausted, but in order not to become exhausted. A series of facts and reasoning lead the author to the belief that sleep is simply an instinct subjected to the law of "momentary interest." Some of the facts speaking against sleep being a result of exhaustion are: absence of parallelism between sleep and exhaustion, the periodicity of sleep, possible postponement of sleep when desired, suggestion of sleep, partial sleep, variety of the types of sleep of animals, etc. This point of view also permits to consider hybernal and estival lethargy as a variety of ordinary sleep, the type of which is probably due to a phenomenon of secondary adaptation.

THE MECHANISM OF SLEEP consists of a reaction of disinterestedness in the event of the moment. Neither the irritability nor the receptivity are abolished during sleep as is generally believed: the reactive function is abolished—interest being lost in the events of the moment. The psychology of dreams justifies this line of reasoning.

This biological theory of sleep can serve as a basis for the study of hysteria on a biological foundation; inhibitory function of defense seems to characterize both conditions (*Archives de Psychologie*, Nos. 15-16, 1905).

On the Fibrillary Structure of the Nervous Elements.

—DR. M. I. GOUREVICH: Ramon-y-Cajal's method was used. The neuro-fibrillary apparatus of the most important cellular types were studied. Sections of the spinal cord, medulla oblongata, cerebral and cerebellar cortex of rabbits were used. The fine neuro-fibrillary network of the cells could distinctly be seen. The fibrils are uniform in thickness. The network can be seen well with an immersion lens. The larger cells of the spinal cord and medulla oblongata (motor cells) present a markedly thick fibrillary network; the fibrils are anastomosed by a secondary set of finer fibrils,—the whole making the network appear closely set. Many cells present a double network,—peri-nuclear and peripheral. The fibrils penetrate into the thickness of the cellular protoplasma and closely adhere both to the nucleus and the periphery of the cell. The general network sends off tufts of fibrils into the dendrites. In these tufts the fibrils are so thickly set that it is difficult to see the fibrils of the secondary set.

In the small cells of the spinal cord and medulla oblongata (especially in the spindle cells) the endocellular network is not quite as well developed as in the cells mentioned above; besides, there is no differentiation into a perinuclear and peripheral set; the primary fibrils predominate, while the secondary are not quite marked.

The cells of the gelatinous substance of Rolando are apparently free from the fibrillary structure.

Network in the pyramidal cells of the cortex: in the main dendrite the fibrils run parallel to one another, the secondary fibrils being scarcely visible. A similar aspect of the fibrils is seen in the part of the cell near the main dendrite. The main part of the cells is taken up by the network. In the axis-cylinder the fibrils are closely set. The secondary dendrites of the pyramidal cells also have fibrils.

In the cerebellum, the Purkinje cells also present fibrillary networks. Here, the pericellular do not connect with the endocellular fibrils, the two being divided by a distinctly unstained layer.

The fibrillary network may be considered as a special apparatus of the nervous protoplasma. Further studies of the nervous elements should be made, however, for the elucidation of the mechanism of their workings (*Journal Nevropatologii i Psichiatrii Imeni Korsakova*, No. 5, 1904).

The Question of Suicide. Medico-Psychological Sketch.—

I. M. REICHERS: An exhaustive collection of opinions of various

thinkers regarding suicide is presented. Some of the ancients considered suicide as a holy duty. The Celts and Gauls did not prize life. This is indicated by their customs of receiving the new-born infant with wails and cries, while death in a family was celebrated by singing songs. Buddha taught that the body and its functions were unclean and that death, particularly suicide, did not imply an end of life but rather a transition of the soul to a better world. During the famine of his time he ended his life in order to furnish meat for his fellow beings. The Chinese, Japanese and Hindoos cheerfully committed suicide by most atrocious methods. Collective suicide was also in vogue in olden days: five hundred philosophers committed suicide when it was ordered to burn the works of their leader, Confucius. The Jews and Greeks, on the contrary, attached importance to life. Aristotle, Plato and others taught that it was a shame to shrink from the various phases of stress of life and seek refuge in death. In the latter days of the Greek Republic, however, when the Roman oppression was severe, suicide came into vogue: the poetess, Sappho, committed suicide, and Seneca taught that the right to live or die was an individual privilege. He committed suicide by cutting a vital artery while taking a bath. Voltaire said "la vie est un opprobre et la mort est un devoir". Rousseau, Shakespeare, Schopenhauer, Leopardi, Hartmann and others approved of suicide. Krachkovsky defined life as being "a multitude of foolish hopes in the future and a multitude of absolute foolishness in the past." Tolstoi said that life was nonsense. Goethe said of his life: "it consisted of throwing a stone and of picking it up again". Rubinstein said: "struggle whets the appetite for life". Peter the Great and Catherine II severely condemned the act of suicide. According to the psychiatrist, Sikorsky, $\frac{3}{4}$ to $\frac{2}{3}$ of suicides are psychically well subjects. Some claim that suicide to-day is due to stress of life, lowered moral ideals, etc. A large number of authors, however, consider suicide as an abnormal act (*Naouchni Archiv Vilenskoï Okrougenoi Lechebnizi*, Nos. 1-2, 1904).

Psychological Notes on the Pahouin Negroes.—M-LLE ALICE DEGALLIER has had ample opportunity to study the children of these negroes as a missionary teacher in Congo. The children are particularly capable of reading with facility writing and printing turned upside down. When a book turned upside down is given to them to read, they make no remark, take it as a matter of course and readily read correctly. Adolescents, however, who had learned to read during childhood, cannot read writing or printing turned upside down with as much facility as children can.

The children also write upside down as if it were natural to do so. They are particularly prone to write upside down the letter *i* and figures 2, 3 and 5. This facility to read and write upside down is ascribed by the author to the vivacity of their intelligence. These negroes are excellent imitators, and their handwriting seldom retains the childish characteristics for any length of time, but their caligraphy closely resembles that of the missionary who has taught them to write. The sense of color is highly developed as regards intensity, but not so as regards quality. Memory is highly developed, especially auditory memory for melodies, words, songs, etc. Gesticulations and facial expression are highly developed. The author had great difficulty in distinguishing one pupil from another until she learned to distinguish them by their respective facial expressions. Their sense of right and wrong is rudimentary or even wanting, but they are markedly affectionate (*Archives de Psychologie*, Nos. 15-16, 1905).

Psychic Suffering of Women as One of the Forms of Sexual Psychopathia.—DR. JAKOVLEV: The title of the work is misleading, as the author devotes his interesting and exhaustive paper to the elucidation of the fact that women are innocent victims and sufferers if caught in the immoral net of the sadist. Although realizing the fact that under the present conditions it is difficult and even impossible for woman to learn how to distinguish between an honorable flirt and a sadist, he gives her decided advice how to act towards him when she meets him: she should slap him in the face and loudly proclaim her protest against his so-called amorous demonstrations. The sadist has no sense of morality, justice or courage, and in his cowardly way he will make attempts to defame the good name of woman who repulses him—no matter whether she acts openly and bravely or timidly and modestly. Woman's freedom of to-day and the consequent tolerance of flirtations are a great help to the sadist, who is thus enabled to carefully work his ways of indecency. Flirtation is vigorously condemned by the author from all points of view. Pure and true love among the young does not need the sensual support derived from touching each other's feet under the table at which one dines, etc. Advice is given to men to practice more reserve towards woman than even society and woman herself demand; and in this way, the author claims, the woman would not acquire habits of flirtation that may eventually facilitate the sadist's advances towards her. It is also advised to instruct woman regarding the existence of sadists in society—even when it is of the highest class and standing. The law should deal with the sadist himself (*Vestnik Doushevnic Boleznei*, No. 2, 1905).

From the American Journal of Insanity, April, 1905.

1. A Contribution to the Study of the Relation of General Paralysis and Tabes Dorsalis.—DR. HENRY COTTON concludes his paper as follows:

1. Clinically tabes dorsalis and general paralysis present many analogies in etiology, symptomatology and course.

2. Their occurrence in the same individual is more than a coincidence.

3. In these cases of tabo-paralysis the symptoms presented are identical with the symptoms of general paralysis and tabes when seen apart, only differing in degree, according to the extent of the anatomical lesion.

4. The clinical symptoms of tabo-paralysis have the same anatomical basis as in the separate diseases.

5. Anatomically the affection of the posterior columns of the cord as seen in tabo-paralysis does not differ from the picture presented in pure tabes. The same systems are affected and the segmental character of the process is the same, also the process in the cortex is identical with that of general paralysis.

6. While the above facts show the intimate relation between general paralysis and tabes dorsalis, the unsettled status of their pathogenesis at present prevents their identity being absolutely established on an anatomical basis.

2. Notes of a Visit to Some Foreign Hospitals, Mainly in Germany.—DR. E. N. BRUSH says in part that the distinguishing feature of the German clinics for mental diseases is their resemblance to general hospitals so far as methods are concerned. All that medical science can offer is brought to bear in investigating the pathological conditions, both by careful systematic clinical work and painstaking laboratory investigation. In no hospital, with which the author is familiar, do patients receive as careful clinical study as do the patients in the better known German clinics. Admission to those clinics is accompanied by no more difficulty than is that to a general hospital. The best scientific men are secured as directors and internes for these clinics, and the public has confidence in those men. The demand for clinical instruction in psychiatry in this country is a crying necessity, and some of us long for the day when our material in psychiatry may be made available. Such an innovation would be for the lasting benefit both for the insane and the physicians who would study and treat the patients' maladies. "To confess that that dawn seems far off, and that it is delayed by the clouds of political ignorance and political vice which overshadow so many other things which might work for the healing of the nation is humiliating, but the truth compels the admission."

3. Comparative Measurements of the Hard Palate in Normal and Feeble-Minded Individuals. A Preliminary Report.

—DRS. WALTER CHANNING AND CLARK WISSLER. The measurements reported on are: A. The minimum distance between the first molars measured horizontally from the bases of the molars. B. The maximum height of the palate, measured from the approximate plane of the gum line. C. The distance from the line connecting the two first molars to the alveolar point. D. The distance between the canines, measured horizontally from their bases. It is concluded that the absolute size of the palate as measured by the specific dimensions seems to be the same for feeble-minded as for normal individuals. There is a relatively small difference in the variability of these dimensions, feeble-minded showing greater variations. The width of the palate from the first permanent molar forward remains approximately unchanged from the ninth or tenth year of life. It is probable that there is no appreciable growth after the sixth year.

The Cerebral Cortex of the Dolphin (*Delphinus Delphis*). Histological Research.—DR. V. BIANCHI concludes his paper as follows:

1. The research shows a striking correspondence between the macroscopic disposition of the cerebral hemispheres, the histological structure of the cerebral cortex and the psychic manifestations of the dolphin. The contradiction between the richness of the cerebral convolutions of this animal and its relative stupidity is explained by the architecture of the cerebrum.

2. The cerebral hemispheres of the dolphin have the same characteristics as those of carnivorous animals. The difference between the two consists of the lesser development of the frontal lobes in the dolphin. The meagre frontal development in the latter quite recalls that of microcephalic subjects.

3. The structure of the cerebral cortex differs from that of more intelligent mammalia, among other things, by a certain uniformity of its elements, scarcity of the giant pyramidal cells and the paucity of their prolongations among the few that can be found.

4. The relation between the cellular body and the neuroglia reticulum is quite distinct in the dolphin, appearing either as a pericellular, intracellular or intraprotoplasmic network.

5. Contrasting these findings with those of the cerebral cortex of man, it may be stated that the marked psychic stupidity of the *delphinus delphis* is due to the paucity of development of the frontal lobes—the principal seat of the power of association (Prof.

L. Bianchi), to the uniformity of the elements of the cerebral cortex and the paucity of the giant pyramidal cells (*Annali di Neurologia*, Vol. XXII, No. 6).

Example of Useful Work During Sleep.—P. BOVET publishes a case of a youth who owes his success at an examination to a useful dream: he should have studied up a large number of French works, one of which was Molière's *Le Misanthrope*. All the works were gone over, except the last named. He had never read it nor had he seen it played. He had seen, however, the last ten verses on one page in a given edition of Molière's works. Before retiring, he had decided to present himself at the examination the next day without having ever read the verses. The following morning he woke up early and was quite astonished to find himself reciting the verses. He then recalled that he had dreamt of reading the same verses. At the examination he was asked to recite the latter and he did so creditably. The author explains the incident by the youth's unconscious remembrance of the visual image of the last ten verses and by a true process of reflexion during sleep. This dream emphasizes the utility of work done during dreams (*Archives de Psychologie*, Nos. 15-16, 1905).

Contribution to the Study of Porencephalia.—DR. O. BROGLIO publishes a case of true, or congenital porencephalus. During life the patient was demented, blind and had paralysis of the lower limbs. At the autopsy it was found that the right hemisphere presented agenesis of the parts corresponding to the temporal and occipital lobes, so that the entire hemisphere was reduced one fourth of its size. The meninges that should have covered the absent parts penetrated into the lateral ventricle. Besides, there was also agenesis of the whole temporal lobe of the same hemisphere—the upper, middle and inferior convolutions. There were many other anomalies in both hemispheres. There was also cranial malformation, the porencephalic part was lined with the arachnoid, there was communication with the lateral ventricle, the pia mater was absent and the convolutions of the porencephalic area were disposed in radii. The author terms this case as one of true porencephalia—according to Bourneville's classification (*Annali di Freniatria*, March, 1905).

A Disease of the Attention.—DR. HOSPITAL: The disease manifests itself mostly among the emotional, impressionable, irritable, sensitive, neurasthenic, and the wealthy; it is more prevalent among the higher classes of society and the indulgers than among the masses and the workers. The affection consists of the various "phobias": inability to sleep or to pursue one's occu-

pation, on hearing the sound of dripping water, chiming bells, noises, etc. Any one of the special senses may be in a state of hyperexcitation and cause the sufferer marked discomfort. The author says that in such cases there exists an erethism of the attention in regard to the special sound, color, light, smell, etc., that constitutes a disease of the attention: the sufferer is unable to direct his attention to anything else than the particular manifestation that is painful to him. The dislike of one's mother-in-law is also considered as a morbid manifestation due to diseased attention (*Annales médico-psychologiques*, Nov.-Dec., 1904).

New Chemical Researches in Epilepsy.—DR. PAUL MASOIN has made a study of the blood and urine of epileptics. The cerebro-spinal fluid and sweat have also been studied. While some striking findings have been obtained, the author is conservative and does not draw any decisive conclusions from the vast material collected experimentally. He remarks that we know very little of the mysteries of normal assimilation and disassimilation; consequently it would be hazardous to draw conclusions in the case of similar phenomena in pathologic conditions. The most that can be said is that chemistry should some day resolve the question of epilepsy, as she alone can enlighten us on biologic phenomena. For the present it can only be said that the basis of epilepsy is a special feebleness of the nervous cells, the convulsive tendency of which is higher than normal. The vague term *predisposition* is applicable here (*Annales Medico-Psychologiques*, May-June, 1905).

Mongolian Type of Idiocy.—PROF. KOVALEVSKY has had occasion to observe Tartar-idiotic children and finds that these subjects and the Caucasian individuals afflicted with Mongolian idiocy present similar vivacity of manner and bright facial expression—alongside with profound idiocy. Among the causes found in his cases were alcoholism of the father, syphilis of both parents, moral shock of the mother during pregnancy with the patient, fright of the mother during pregnancy with the patient. Among the symptoms of the patients are pointed out epileptic convulsions, eclampsia during infancy (2 out of 11 cases), hypertrophy of the lymphatic glands (8 out of 11 cases), absence of hair on the pubes and in the axillæ (7 out of 9 cases), irregular dental implantation in 8 cases, narrow palate in 5 cases, standing out ears in 8 cases, squinting in 5 cases, swelling of the face (atheroma) in 2 cases, and monorchismus in 1 case (it is not stated in proportion to what number of cases, but presumably they are all in proportion to 11 cases observed by the author). (*Vestnik Doushevnich Boleznei*, No. 1, 1905).

A Case of Sexual Inversion.—DRS. ANTHEAUME AND PARROT publish the case of a sexual invert, 18 years of age. He had attempted suicide because the world did not approve the mode of sexual life he should have wished to lead. In a detailed letter the patient, a well educated person, explains his psychic life from the special point of view of his trouble. In his farewell letter, written on the eve of his attempt on his own life, he said, in part, that life was made tolerable for the majority of men by hope and ambition, but that the great mass of common people, although living in misery, clung to life because of sexual voluptuousness that enabled them to forget their troubles. He was not ambitious himself and did not care for women. What he cared for was disapproved by society. Hence, he had decided to die (*Annale Medico-Psychologiques*, No. 3, 1905).

Anatomopathological and Clinical Contribution to the Study of the Relation of Syphilis and Progressive Paralysis.

—DR. R. STANZIALE concludes his paper as follows:

1. Of 100 cases of general paralysis 87 had histories of syphilis. Of the 87 cases there were 70 with a positive history of syphilis and 17 with a dubious history of the same.
2. Of the 70 positive cases there were 32 in which syphilis was the only pathologic cause and 38 in which there were other causes besides syphilis.
3. Syphilis may be the only cause of general paralysis, but heredity and acquired causes often accompany the former.
4. In cases of progressive paralysis due to syphilis the lesions of the vessels of the nervous system are of syphilitic origin.
5. Mercurial treatment does not modify the course of the disease (*Annali di Neurologia*, Vol. 2, No. 4).

Decline in Birth-Rate and Mortality of Infants.—F. S. KRUM reviews the statistics of the Government statistician of New South Wales, T. A. Coghlan, showing that a notable decline has occurred in recent years in the birth-rate of New South Wales. Other than natural causes have contributed to bring about the rapid fall in the birth-rate. No causes dependent on natural law have contributed to this decline. The desire of a high standard of ease, comfort and luxury seem to be the essential aims in life of the population and to attain their wishes find it convenient to do away with the natural results of marriage. Within the last fifteen years the practice of "prevention" has been the great cause of the declining birth-rate (*American Statistical Association*, Sept.-Dec., 1904).

The Etiologic Rôle of Syphilis in the Psychoses.—DR. L. MARCHAND concludes from his paper that the toxin of syphilis may bring about psychoses in the predisposed. This etiology of psychoses is not common. The mental diseases appear almost always during the months following the infection. Specific cutaneous lesions frequently coexist with the mental manifestations. Mental disturbances may accompany syphilis whether the latter is of a mild or severe nature. The most frequent forms of psychoses are melancholia, mania, hallucinatory delirium and stupor. These psychoses end almost always in recovery. According to clinicians' ideas specific treatment cuts short the course of the psychoses. Syphilis may also cause melancholia or suicidal tendency through the hypochondria that syphilitics are apt to have (*Revue de Psychiatrie*, No. 5, 1905.)

Inheritance in Man.—ALICE PEARMAIN reviews Karl Pearson's work, in which it is said that mental characteristics are as readily inherited as physical ones are. In his country, like in America, the intellectual classes are scarcely reproducing their own numbers, and are very far from keeping pace with the total growth of the nation. The fertility among the intelligent working classes is also much less than among the uneducated laborers. He expresses his fears that "we stand by an epoch, which will be marked by a great dearth of ability." The "remedy lies first in getting the intellectual section of a nation to realize that intelligence can be aided and trained, but that no education can create it. It must be bred" (*American Statistical Association*, March, 1905).

The Psychical Faculties of Ants and Some Other Insects.—A. FOREL: Considering the domain of perception, will, emotion and correlation in insects, the author concludes that all the peculiarities of the human soul can be derived from the peculiarities of the souls of the higher animals; and all the peculiarities of the souls of the higher animals can be derived from those of the lower animals. Simple but convincing experiments accompany the arguments. The doctrine of evolution, the author says, is just as applicable in the physical field as in the other fields of organic life (*Annual Report, Smithsonian Institute*, 1903).

Nyctophobia in Children.—R. SENET has studied a number of cases of children having fear in the darkness of night. In the majority of cases nyctophobia in children is a collateral phobia. In other cases it is a panophobia, the children fearing not the darkness but everything that may be hidden in the darkness and prove prejudicial to them. In treating such cases, it is well to find the

primitive phobia that had caused the trouble (*Archives de Psychologie*, Nos. 15-16, 1905).

The Genesis and Correlation of the Nervous Elements of the Spinal Cord in the Chicken.—DR. E. LAPEGNA concludes his paper as follows:

1. The ganglionic cells take no part in the formation of the nervous fibres.
2. During the first period of development, the nervous fibre has no connection with the ganglionic cell.
3. The peripheral and central nervous fibres develop from cellular chains.
4. The cellular chains form only the axis cylinder of the fibre, but they do not contribute to the formation of the other attributes of the fibre.
5. The fibre and the protoplasmic prolongations of nervous cells develop from cellular chains.
6. The neurofibrils of the nervous cell are tardy products of differentiation. In the chicken the neurofibrils do not appear before the tenth day of hatching (*Annali di Neurologia*, Vol. XXII, No. 4).

Vambéry and His Linguistic Organ.—In Volume II, page 452, of "The Story of My Struggles", the distinguished linguist, Prof. Artemius Vambéry, says, in part: "An American surgeon asks me to send him a photograph of my tongue, that from its formation he may draw his conclusions as to my linguistic talent".

The Weight of Prof. Taguchi's Brain.—According to the "New York Times", September 7, 1904, the brain of the Japanese anatomist, Prof. Taguchi, weighed 1,520 grams and stands thirtieth in the list of brain weights of men distinguished in the professions, arts and science. The weight of the same brain, however, is said to be 1,920 grams, according to *American Medicine*, December 17, 1904. The weight of the human brain ranges between 300 grammes for the imbecile to 2,000 grammes for the man of genius.

How Should Fatigue of School Children Be Measured?—M. C. SCHUYTEN: Various methods of investigation are considered and indications given how to avoid erroneous conclusions in esthesiometric experiments of children. The general conclusion is that children are more fatigued in the afternoon than in the morning. The morning lessons are more fruitful than are the afternoon lessons (*Archives de Psychologie*, November, 1904).

Clinical and Anatomopathological Studies of Juvenile General Paralysis.—F. BURZIO:—Juvenile progressive paralysis, although analogous in form to that of adults, has its peculiar characteristics: there is frequently arrest of evolution of puberty, predominance of somatic phenomena (tremors, epileptiform attacks, apoplectiform spells) over the mental disturbances (dementia with or without delirium); finally, the cerebral alterations are frequently accompanied by lesions of the medulla oblongata and the spinal cord (*Annali di Freniatria*, March, 1905)

Schopenhauer inherited his mind from his mother who was energetic, a writer and heartless; his character—from his father, who was a banker, odd of conduct, a melancholiac and committed suicide by shooting. Schopenhauer himself was also a melancholiac and subject to various "phobias": he fled from Naples, Verona and Berlin for fear of contracting small-pox, cholera or of being poisoned. At times he had hallucinations of hearing (*Naouchni Archiv Vilenskoi Okrougenoi Lechebnizi*, Nos. 1-2, 1904).

Statistics of the Deaf and Dumb in Germany.—JOHN KOREN finds that, according to the Imperial Board of Health Reports, during the last decade there has been a perceptible decrease in the number of the deaf and dumb. The principal cause of deaf-mutism, aside from heredity, is unfavorable material conditions and an unhygienic mode of life (*American Statistical Association*, Sept.-Dec., 1904).

Psychic Hemiplegia in a Paranoiac.—DR. ZAREGRADSKI: The patient was a typical paranoiac and during the period of delusions of grandeur manifested hemiplegia. A thorough examination proved the hemiplegia to be of psychic nature. The author explains the mechanism of this manifestation by hypochondriacal preoccupations of the patient and by auto-suggestion (*Vestnik Doushevnich Boleznei*, No. 5, 1905).

Continuous Involuntary Crying.—Mrs. Kate Wilbourn, of Sioux City, Ia., presented herself for commitment to the asylum because she had been under a crying spell of four days' duration. She is said to be perfectly sane, but cannot stop crying (*American Medicine*, July 1, 1905).

Two Cases of Korsakoff's Psychosis are published by Drs. Patterson and McCarthy. Anatomic-pathologic findings are also presented, but nothing definite or characteristic has been found in this regard (*American Medicine*, July 1, 1905).

The Rôle of Dreams.—In his article on the biological theory of sleep, Dr. Claparède says that the rôle of dreams is probably that of exercising certain activities (creative imagination, etc.), that are useful to the species, but that do not always have occasion to be brought into play in the individual life.

BOOK REVIEWS.

La Psychologie des Romanciers Russes du XIX-me Siècle.

—OSSIP-LOURIE. 1 volume in-8. Félix Alcan, publishers, Paris. Price 7½ frs. It is difficult to understand Russian literature from reading it in translations. The depth and pathos, flexibility and gentleness of this literature can be understood by none but those who are thoroughly familiar with Russia, its language, its people, customs, social structure and economic and political network. Ossip-Lourié, the prolific philosophic writer, is thoroughly familiar with all the elements that make one competent to understand Russian literature. In this volume of some 438 pages he has surpassed himself in the matter of philosophic analysis of Russian literature of the XIX-th century: he presents here the colossal works of Gogol, Tourgénief, Gontcharov, Dostoevsky, Tolstoi, Garchine, Korolenko, Tchékhev, Gorki, etc., etc., passing the respective masterpieces in review in his familiar decisive and clear style. Although the work is written in the French language, the subject is so vividly presented that the reading of it leaves an impression as if it had been perused in the Russian language itself. So far as the value of this volume is concerned, therefore, as an exponent of a literature that most of us are not privileged to understand,—all praise is due to its author. The practical conclusions from this analytical study, however, present the most important part of the volume. At this moment, when the great struggle in the Far East is going on, the whole world has become psychologically inclined and is asking *why* and *wherefore*? In a small chapter of conclusions the author presents not only the psychology of the nation so well familiar to him, but also what he calls the psychiatry of the same nation. The few remarks that follow give an idea of his trend of thought.

The Russian writers have come from all the classes—beginning with the highest aristocracy and ending with the lowest vagabond. The ideals and national characteristics expressed in this literature, therefore, are not narrow, descriptive of one class of

people; on the contrary, all the classes and their ideals are fully represented and masterfully depicted in the types of the heroes and heroines. The most characteristic trait that first strikes in the pictures of those types is the absence of will-power. All the types show a lack of foresight, judgment and purpose. No literature presents as much pathology of will-power as the Russian literature does. Volition in the personages in Russian novels is always paralyzed, never transformed into an act. Those types often know how to wish for things, but never how to transform their wishes into acts. And for the reason of non-action, the wish itself becomes enfeebled and even disappears. This condition the author explains by the particular social life in Russia, that has made almost no progress within the last century. The trend of thought and social life described in *War and Peace*, written in the beginning of the XIXth century, is the same as that described at the end of the same century in *Resurrection*. Social movement is nil and individuality is in a state of stagnation. The inertia that is forced on the Russian explains perfectly, the author says, the absence of resolute energy and proper direction of will-power of the Russian nation. The lack of exercise of its will-power has caused atrophy of the latter and every outburst of struggle is followed and even accompanied by intense fatigue: there is either apathy or exaltation, but the normal state is unknown to this type. Orchansky is quoted as saying "a small proportion of insane are within the walls of our asylums, in Russia; the great mass of hundreds of thousands of subjects, on the contrary, with paralyzed will-power, are at large." While capable of an audacious outburst, ready to sacrifice himself for his ideas, the Russian becomes lamentably feeble whenever he is required to use sustained effort for any length of time in order to uphold the same ideas. The atrophy of will-power and the abundance of psychic invalidity of the kind explained among the Russians are results of the social structure in Russia, of its degrading régime and interference with all personal liberty and individual initiative. Even the higher classes, who have and are enjoying the advantage of European culture, borrow the customs, manners and polish in Europe without being touched in any way by the spirit of Western civilization.

Panslavism is a chronic delirium born of the conditions mentioned above. It is a manifestation of megalomania. The theory held by the panslavist is that Western civilization is rotten and must make place for a new civilization—that must come from Russia. This new civilization the author calls the civilization of the Knout. The rapid strides of this new civilization, the author

says, have thus far ended in the question of Poland, Finland, Kishineff and Manchuria.

Pushing further the study of the psychology of Russia, the author points out the results of its peculiar methods as applied to its nation. The ignorance of the masses has borne corresponding fruit. Dostoevsky makes Verchovensky say, in *Bessy*: "The nation is drunk, the mothers are drunk, the children are drunk, and in the courts of justice one continually hears 'Sentenced to 200 lashes.' Let the generations grow! What a pity we cannot wait to see them. They shall all have become drunk." Sikorsky, Orkhansky and other alienists are sounding the alarm about the extensive prevalence of alcoholism and epilepsy. Orchansky says: "In Europe alcohol is drunk in small glasses, but here epidemic alcoholism affects whole communities,—the rulers and the ruled drinking by the half-bottle."

And yet the vitality of the Russian is immense. Tchekhov's hero is made to say that the Russian vitality must triumph in the end.

This is a valuable volume written by one of the most competent scientific writers on general literature.

Semeiotics and Diagnosis of Mental Diseases. Their Treatment and Handling.—SERGE SOUKHANOFF, Privat-Dozent, University of Moscow. M. Borisenko, publishers, Moscow. This work appears in three parts, of 175, 180 and 206 pages each. It represents a collection of lectures on mental diseases delivered at the University of Moscow, in 1904. The first part is devoted to the consideration of melancholia, mania, amentia and primary mental confusion. The second part treats of Korsakoff's disease, obsessional conditions and circular psychoses. The third part deals with primary juvenile dementia, progressive general paralysis and psychoses during the course of cerebral arterio-sclerosis. The subject is treated in the most modern style, the newest scientific and clinical conceptions relating to psychiatry being fully represented. Dr. Serge Soukhanoff is well known not only in all Western Europe, but also in this country. Some parts of the present work were published in this Journal. His excellent study of Korsakoff's disease, for instance, appeared in 1903, Vol. IV., Nos. 1, 2, and 3, of this Journal. Dr. Soukhanoff is one of the younger psychiatrists who consider it a necessity to be familiar with the fine anatomy of the brain in order to properly understand the study of psychiatry. His erudition and special scientific knowledge are well reflected in his present work, a translation of which into English would constitute a fine addition to our psychiatric literature.

THE JOURNAL OF MENTAL PATHOLOGY.

VOL. VII.

1905.

No. 4.

REFLEX AND AUTOMATIC EXCITABILITY.

(From the Physiological Institute, University of Rome, Italy).

BY DR. SERGIO SERGI.

In this brief communication I shall make some cursory remarks on the results of some experiments made on the *testudo græca*. The results seem to me to be of general interest as regards the function of the central nervous system.

METHODS AND RESULTS.—In one of my papers (1) I described the experimental method used. I have followed the same method in this experimental work. I wish to remark that the experiments were made on the semi-membranous muscle, sectioned at the end of its tibial insertion, the free end connecting with a recording lever. In the study referred to above I pointed out that at all seasons of the year the voluntary muscular activity of the *testudo græca* presented a periodic irregular form and that every period presented two phases: one of marked and the other of decreased activity. Similar results have been obtained in my new experiment to be presented below.

The tortoises were kept under experiment many hours in succession, before taking the tracings, so that the form of their individual voluntary movements should be expressed more completely than would have been the case otherwise. This made it possible to draw a correct parallel between this form of movements and that obtained by reflex action or caused by given stimuli.

A fact of constant occurrence is that even under similar conditions not all animals react in the same manner, some responding readier to stimuli than others, while some do not respond at all.

This does not imply, however, that there is a decreased voluntary activity; in fact, I have observed exaggerated periodic voluntary motility following marked deficiency of reflex excitability. In such a case, during the period of repose, when all excitability is concealed, it may be said that there exists a condition of somnolence of the central nervous system. Sometimes, single tactile stimuli do not provoke any motor response, while repeated tactile or dolorific stimuli are followed by a phase of great activity that may be termed activity of awakening. This induced phase does not present any individual characteristics differing from those not preceded by stimuli. Hence, it expresses awakening of voluntary activity brought out through reflex channels.

Increase of the surrounding temperature causes the phases of marked activity to come closer together, their tracings becoming less and less marked and finally disappearing altogether; in such cases the contractions are made more frequently but are less ample, on the level of the tonus line that rises higher and higher. With the lowering of the temperature the voluntary movements decrease until they disappear altogether, although the reflex excitability can still be provoked; the tonus oscillations also gradually incline towards the minimum, the most important ones following the contractions, after which there is a gradual descent.

Quite often the muscular reaction to tactile stimulation is expressed by relaxation or contraction. Such relaxation takes place now quickly, and is followed by a brisk return to its tonus line of stimulation, now slowly, and is accompanied by a descent of the tonus line that lasts a given period of time; at other times the relaxation is followed by a contraction. Muscular relaxation takes place mostly when the stimulus is enacted in some region of the body opposite to that in which the muscle furnishing the tracings is, or at least in one of the regions of the body outside of that comprising the recording muscle. The stimuli causing such reactions are such as touching of the nates, eye-lids, neck or the limbs, but the reactions do not present any fixed form; indeed, the same stimulus may cause synchronously relaxation in both semi-membranous muscles, just as well as contraction in one and relaxation in the other muscle. These reactions are not proportionate to the intensity of the stimulus, as marked and feeble stimuli, respectively, such as pricking of the inner nostrils with a sharp metallic point, may provoke either relaxation or contraction. I have also observed active relaxations of the triceps muscle of the anterior limb, and made some experiments with such relaxations.

It is most interesting to note the frequency with which some individuals react to a given stimulus in a given point rather by

relaxation than by contraction, and the frequency of the occurrence of relaxation on the side opposite to that on which the reacting muscle is.

If stimuli of the same nature (repeatedly touching a limb in the same place) are made to follow at given periods during the phase of repose, the first stimulation may be followed by a quick contraction and rapid augmentation of the tonus, after which the tonus descends slowly, the rapidly succeeding contractions provoked by the similar contractions being registered on this line of descent. Hence a stimulus causing a rapid contraction with rapid increase of the tonus may, if repeated, provoke new rapid contraction without bringing about new changes in the tonus. Similarly, an excitation, followed by relaxation of the tonus that relaxes more and more with the repetition of the stimulus, causes small and rapid contractions that are registered on the descending tonus line.

At times I obtained the phases of activity after single stimuli that were followed promptly by quick relaxation of the muscle, and hence of the motor group. In one tortoise, in which the temperature did not reach 17 degrees C., it was impossible to find other forms of movements, while at 17 degrees C., periodic forms with tonus oscillations appeared; the phases of great activity of voluntary movements were preceded by muscular relaxations similar to those obtained through reflex channels at a lower temperature, after which the groups of movements followed.

In the experiment in which the phase of repose was represented by a descending tonus line, the stimuli that caused muscular relaxation readily provoked the reaction, transforming the slowly descending tonus line into a descending line by gradation. The stimuli that caused muscular contraction either did not cause any reaction or had to be repeated in order to obtain it. Hence, if the stimulus was followed by a reaction, in the sense of automatic tonus oscillation, the response was obtained much quicker and easier than when the stimulus acted in the antagonistic sense.

Another important observation is the following: a tactile stimulus was repeated many times during a long time with the same rapidity and intensity (repeatedly and rapidly touching the posterior limb on the side opposite to that of the recording muscle); this excitation was kept up during the entire length of the period including both the phase of repose and that of great activity. The stimulations were started at the beginning of the period of repose (see Fig. 1). These were followed by continuous contractions, the amplitude of which did not reach even half of that of the voluntary groups. These induced contractions were dis-

posed on the descending tonus line, whereas in the part of the tracings obtained before the infliction of the stimulus, during the phase of repose, there was no such form of tonus oscillation (see lower tracing of Fig. 1). During the excitations the groups of contractions are ampler than those that precede, and correspond to the group of movements of the phase of great activity or the awakening of the animal. This group of ample contractions was followed by another group of shorter ones registered on the tonus line corresponding to the maximum elevation obtained during the phase that preceded. The tonus oscillated slightly, gradually descending, finally to join the level of the maximum contractions during the first stimulations; after this the tonus, descending slowly, returns to the line it presented previously—during the voluntary movements. This tracing demonstrates the influence of movements on the tonus, and that under the action of a given and continuous stimulation it is possible to transform, through a reflex channel, the phases of repose and activity.

Soon after this experiment, when the phase of the repose had already begun, I repeated the same stimuli on the same animal. In the tracings (see Fig. 2) two alternating phases can be distinguished during the entire period of the stimulation: one, ampler and more distant, and one of shorter and closer contractions—both oscillating about the high tonus line, but the second much more so than the first one; the latter represents the phase of great activity, while the former that of small activity modified under the action of continuous stimuli. When the stimulation is suspended after this long activity there is compensatory repose.

Lowering the temperature, while the voluntary movements are dying away and reflex excitability is retained, it may be seen that the action of prolonged stimulation does not cause the forms described above, but there are rapid and uniform, ascending and descending movements about the tonus line.

CONCLUSIONS.—The excitability of the central nervous system is not the same during voluntary and reflex action respectively. Indeed, there may be marked voluntary activity, while reflex activity is totally wanting. On the other hand, all voluntary manifestation may be dormant, while reflex action can be obtained with the greatest ease. There exists, therefore, automatic excitability for the display of voluntary activity that is distinct from reflex excitability.

Lowering of the temperature depresses both activities, and heightening it within certain limits awakens both, but the reflex

is more resistant than is the automatic excitability to changes of the temperature.

The automatic excitability may be whipped up by stimuli; hence, a preceding reflex excitation may cause or influence the conditions necessary for the awakening of the voluntary groups. During the display of voluntary actions, that are exponents of automatic excitability, the reflex excitability is at its minimum. On the contrary, during the phases of repose reflex excitability is at its maximum. Hence, automatic excitability does not go hand in hand with reflex excitability, but tends to suppress it. Indeed, rhythmically repeated stimuli modify the phase of activity much less than does repose.

Automatic and reflex excitability do not act similarly in relation to the tonus and the rapid contractions: the tonus is influenced more by reflex excitability, while the rapid contractions are more influenced by automatic excitability, so that during the phase of great activity the reflex action appears through the modifications of the tonus line and not through those of rapid contraction. This fact is still more accentuated when the rapid contractions are caused by reflex action.

The automatic excitability is refractory to a certain extent to the influence of reflex action not only as regards rapid contractions but also as regards the tonus; this appears when stimuli tend to modify, in an antagonistic sense, the automatic manifestations of the tonus, while there is the contrary effect when these stimuli are directed to favor the automatic manifestation. Another example of the refractoriness of the tonus oscillations I described when speaking of rapid stimuli at a certain distance, that do not succeed in modifying the tonus line brought about through reflex channels, but that cause, on the contrary, new rapid reflex contractions.

The facts described amply demonstrate Fano's claim (2) made a few years ago, the essence of which is about as follows:

"A centre may be excitable through automatic stimuli that reach it through the intercellular connections and not through an excitation reaching it from the periphery." Fano arrived at this conclusion from experiments made on the *emis europæa scerebrata*, in which he could observe the prevalence of automatic movements in the anterior limbs and of reflex movements in the posterior ones. In the *testudo græca* I observed similar facts and shall consider them in another paper devoted to the analysis of associate movements in this animal. My present study also demonstrates that both rapid and slow contractions (tonus os-

cillation) are differently influenced by automatic and reflex actions respectively.

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EXPLANATION OF THE TRACINGS.

Fig. 1. Tracings of the semi-membranous muscle of the *testudo græca* while in normal relation with the central nervous system.

The lower tracing shows the phases of small and great activity during the development of the voluntary movements. The upper tracing shows the modification of the same phases in the same individual under the influence of a rhythmic tactile stimulus: in 1, the stimulus commences, in 2 it ceases. The more ample contractions, in the middle of the experiment, after which the tonus line keeps up quite high, correspond to the phase of great activity, this activity being more evident on the lower line of the tracings. In * the stimulation is suspended for a very short time.

Fig. 2. Conditions as in Figure 1.

In 3 the stimulations commence and in 4 they cease. The phases with the more ample contractions of the upper tracing correspond with those of great activity, the tracings of which are more clearly seen on the lower line obtained on the same animal.

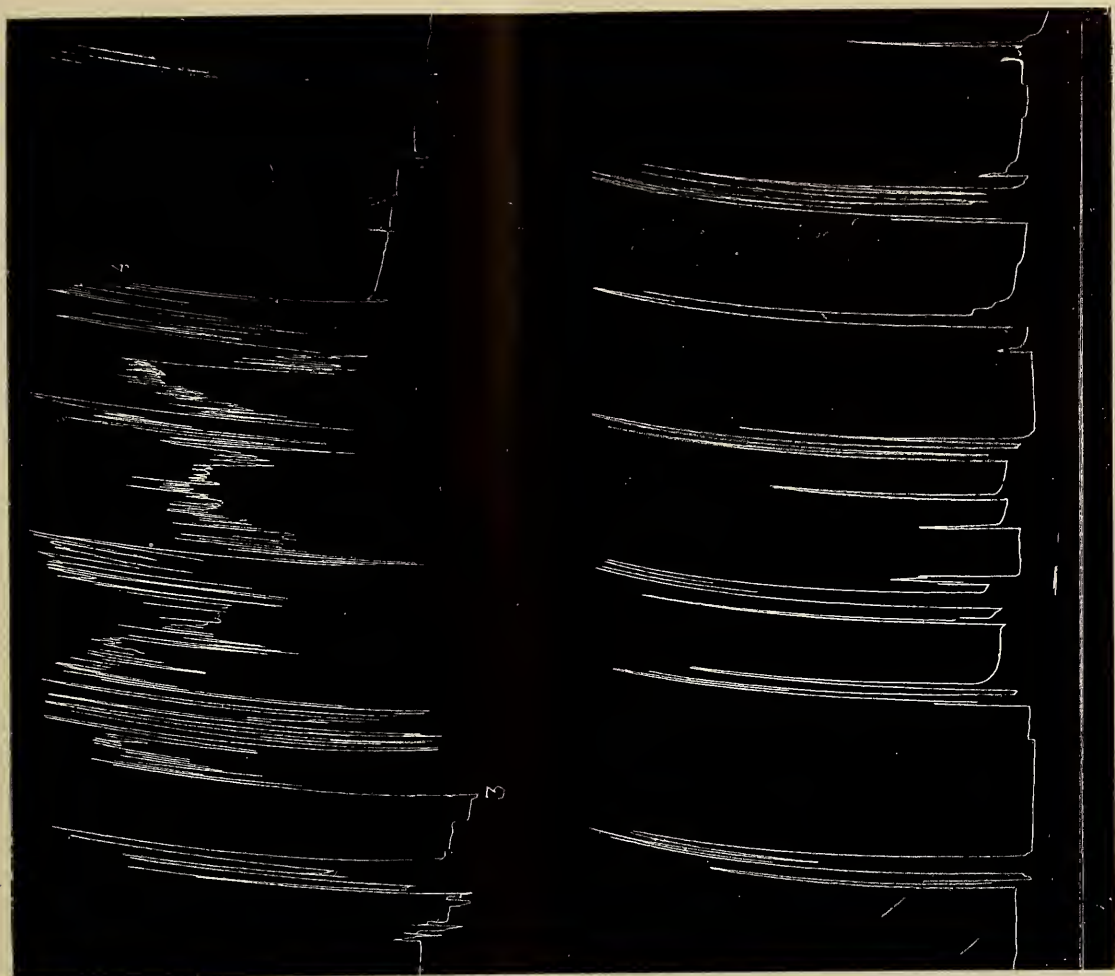


FIG. 2.

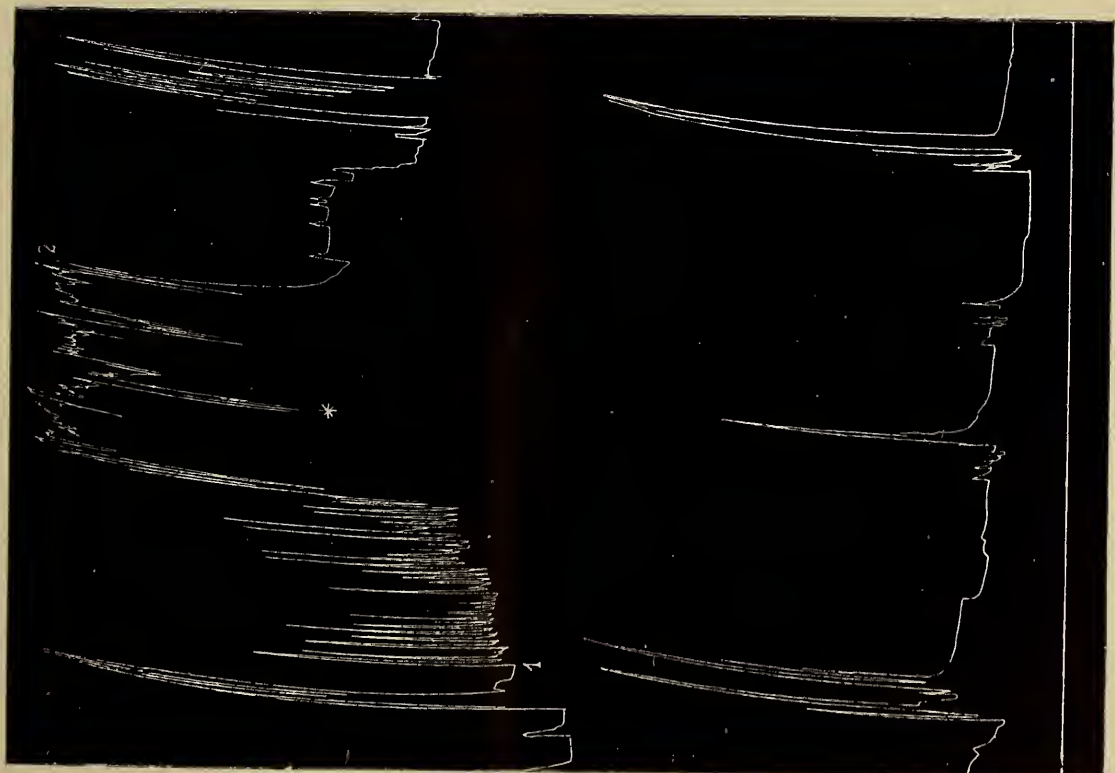


FIG. 1.

NEURASTHENIA AND NEURO-HYPERSTHENIA OF GROCCO.

A CRITICAL REVIEW.

BY DR. PIETRO TIMPANO.

Professor Grocco, of the Superior Institute of Florence, remarks in the *Bollettino delle cliniche*, February, 1905, that certain authors confound certain neurasthenic syndromes with neurasthenia itself, while those syndromes are in reality physio-pathologic manifestations of an entirely different affection. Thus, while neurasthenia is a disease characterized by functional exhaustion of the nervous system, the symptoms described by Grocco are characterized by prolonged functional exaltation of one or more spheres of the nervous system itself.

Importance is claimed for this distinction both from the theoretical and practical points of view, as the treatment of the hypersthenic differs from that of the neurasthenic subject.

I shall consider below whether the syndrome described by the eminent clinician of Florence, and designated by him as neuro-hypersthenia may be considered as a pathological entity and whether it may be brought into the large group of neurasthenias.

A cerebral excitation (an idea or group of dominant ideas) may cause, in a manner similar to that of an internal cause, exaltation of psychic activity for a more or less long period of time. The patient then becomes excited, his mimic emotiveness is exaggerated and the various manifestations of speech are also exalted. Nervous tension is exaggerated in the cerebral sphere and hypersthenia becomes manifest. According to Professor Grocco, these manifestations have nothing in common with neurasthenia in which nervous tension is decreased.

There may be cerebral excitation without exaltation, as is the case when one is preoccupied without being depressed. Under such conditions the nervous tension is also high and the state corresponds to hypersthenia. The only difference between the two excitations lies in their respective colorings, tonus of sentiment and, according to Grocco, both conditions represent a neuro-hypersthenic syndrome.

Prolonged excitation and hyperfunction are always readily obtained. Thus, increased gastro-intestinal activity as regards secretion, rapid digestion and ready defecation ending with deranged gastro-intestinal function would be one of the examples of neuro-hypersthenia. Considered in themselves, such syndromes may be said to represent morbid entities differing from neurasthenia, and hence their clinical value would also be different. The prognosis and treatment would also be different.

But is there really an essential difference between the pathologic conditions that Grocco brings under the heading of neuro-hypersthenia and neurasthenia properly speaking? It seems to me that the distinction is more theoretic than real. Indeed, what is the characteristic feature of neurasthenia? Grocco himself defines neurasthenia as an exhaustive disease of the nervous system. Now, the nervous system or given parts of it may become exhausted in two principal ways: slowly,—when the causes act gradually (chronic intoxications, infections, slow and repeated emotions, sexual abuse, etc.), finally reducing the vigor of the nervous system so that in the end all the organs are in a condition of exhaustion at the slightest attempt at function; rapidly,—when an acute intoxication or infection or a violent emotion profoundly disturb the cerebral or spinal functions, particularly when there is hereditary or acquired predisposition, the nervous tissue becoming so changed that the processes of integration and disintegration are altered, or integration is slow while disintegration is accomplished more rapidly. Such a condition brings about debility of the tissues and their abnormal exhaustion during function.

Under the conditions just described the nervous system may be whipped up, during a given period of time, and brought into a condition of functional exaltation, without there being any manifestations of exhaustion for a given time. This may be followed by two conditions: either the more or less prolonged hyperfunction is followed by a cure or else the final condition of nervous exhaustion becomes more marked and persistent.

Should not the induced hypersthenia come under the heading of neurasthenia? The condition is different, but the disease re-

mains the same. If the nervous system responds to a stimulus by entering into hyperfunction of marked duration, it means that it is highly excitable because of its condition of exhaustion. If the induced hyperactivity is slight and of short duration, the subsequent exhaustion may be of no importance; in the contrary case, however, the subsequent exhaustion may become troublesome.

Whether the nervous system reacts to the stimulus by exaltation or morbid exhaustion, the root of the evil is always its debility, a slight excitation bringing out exaltation of a certain duration and frequent repetition of the same only causes eventual nervous debility more marked than it was originally. Hence, neuro-hypersthenia is the effect of a special debility of the nervous system, just as neurasthenia is the effect of a deeper and more marked debility.

In order to draw a still finer distinction between neurohypersthenia and neurasthenia, Grocco states that in the treatment of the respective diseases excitant medication agrees with the neurasthenic while it is contraindicated in hypersthenia. This point of view is not verified, however, in clinical work. One need only call to mind the treatment of the various disturbances of sexual function as regards, say, erection and ejaculation to see that Grocco's assertion is not sustained clinically: consider, for instance, the administration of strychnine for the purpose of remedying the debilitated function of the centre of ejaculation in the neurasthenic,—a centre easily excited and already debilitated. Far from needing excitation, such a centre is in need, on the contrary, of rest—all excitant agents in their various forms being decidedly harmful. In easily provoked pollutions of the neurasthenic the bromides, belladonna and other calmants are indicated rather than strychnine. The trouble in question is accompanied and is due to functional hyperexcitability of one of the spinal centres. And this hyperexcitability is a variety of sexual neurasthenia, not a distinct entity,—not a neuro-hypersthenia in Grocco's sense.

In some forms of cerebral neurasthenia with morbid hyperfunction characterized by ready associative and dissociative ideation, exaltation of the various mental processes, enfeebled reflective and critical power, etc., excitant treatment is certainly not the proper one. Nervous excitants, traveling, etc., do harm to the patient because they increase his abnormal nervous tension. On the contrary, isolation, rest, psychotherapy, calmants and good nutrition give good results. Yet the above mentioned forms may certainly be considered as various manifestations of neurasthenia.

Hypersthenic conditions do exist, without any doubt, but they differ from asthenia only in so far as the term is concerned, otherwise Grocco's definition of the respective conditions would have to be accepted: neurasthenia indicating a condition characterized by functional exhaustion—if neuro-hypersthenia indicates a condition of morbid functional exaltation. Such a distinction by terms, however, does not always indicate the essential difference between the two conditions. Indeed, the conditions of hypersthenia are generally the initial phases of neurasthenia, because, as I pointed out above, the roots of the two disturbances are identical as regards quality, differing only as regards quantity: the nature of the disturbance shapes the disease and its various manifestations,—the syndromes. It is not correct, however, to fashion a complete morbid entity out of syndromes forming part of a well defined disease.

Thus, even the therapeutic considerations presented by Grocco do not justify his terminology.

Without confounding asthenic with hypersthenic conditions, I consider both as different clinical manifestations of one and the same disease, applying excitant or calmant therapeutic measures according to requirements. If we made a distinction between neurasthenia and neuro-hypersthenia, the treatment and prognosis in the respective cases would often be erroneous: if we accepted Grocco's definition of neuro-hypersthenia as a condition entirely different from neurasthenia (augmentation of nervous tension in the former and depression in the latter) without regard to the genesis and development of the respective disturbances, we should end by confounding cause and effect in the given affections. It can only be repeated that both the conditions of neurasthenia and neuro-hypersthenia are the effects of the same cause: debility of the nervous system, presenting either one or the other phase, according to the quantity of its enfeeblement.

It is well known that neuro-psychic predisposition influences individual reactions to morbigenous excitations. Thus, some individuals have a more resistant nervous system than others, and morbid excitation in some may end in recovery, while in others, the disturbance may end in chronic nervous exhaustion. It may be well to remark that in some cases the period of acute exaltation may, instead of ending in recovery, end in a condition of chronic nervous exhaustion—not because the exaltation has tired the nervous tissue, but because new pathologic causes (psychic or other) have intervened before recovery had taken place, causing lack of nervous force to sustain a normal amount of function. In other cases, again, the new psychic disturbance may be neu-

tralized, so to speak, by still another psychic cause, enabling the subject to be dominated by the original excitation. In such a case, the period of excitation may be called that of neuro-hypersthenia, while that of depression—a condition of neurasthenia. It is always understood, however, that we are dealing fundamentally with neurasthenia—whether there are periods of exaltation or depression.

From what has been said above the following conclusions may be drawn:

1. The difference between neurasthenia and the syndrome of Grocco is not that of nature but of degree, as the cause of neurasthenia and neuro-hypersthenia is the same, consisting of enfeeblement of the nervous tissue.

2. The therapeutic test indicated by Grocco is not sufficient to prove the difference between the two morbid conditions, because it is not true that the neurasthenic can always be benefited by excitant remedies.

3. Some phases of neurasthenia may present themselves without the characteristics of profound functional depression, in which the depression, under the influence of morbid stimulation, may be replaced by exaltation of more or less marked duration. This condition of exaltation, far from representing neuro-hypersthenia of Grocco, enters decidedly under the heading of neurasthenia.

Bova, Reggio Calabria.

ELECTRIC SLEEP. AN EXPERIMENTAL STUDY
WITH AN ELECTRIC CURRENT OF
LOW TENSION. ILLUSTRATED
WITH CARDIAC AND RESPI-
RATORY TRACINGS.*

A PRELIMINARY COMMUNICATION.

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In Vol. VII, No. 2, of THE JOURNAL OF MENTAL PATHOLOGY, I explained in my paper entitled "Electrocution. An Experimental Study with an Electric Current of Low Tension," etc., the mechanism for the application of Prof. Leduc's current for the purpose of experimental electrocution. The same conditions of the nature of the current and mode of application of the electrodes apply to the induction of electric sleep, but the potential should be about 65 per cent. smaller. I have used various interrupters for this purpose, and much may be said about the kind of interrupter that is to be preferred in this experiment; I hope to consider this detail, however, at some future time. When the circuit is completed and ready for use the following conditions should prevail: 110 interruptions per second, the animal receiving about $5\frac{1}{2}$ volts, under 1.3 milliampères, the current thus passing one-tenth of the entire period.

* Experiment demonstrated at the V-th International Congress of Psychology, held in Rome, Italy, April 26-30, 1905.

Before putting the animal (rabbit for the above conditions) in the circuit, it is wise to first interpose an inert resistance and examine every detail before the animal is subjected to the effect of the current. This small precaution is always valuable, often obviating many an inconvenience consequent on some little technical defect in the circuit. Another convenience is the interposition of a mercury switch of simple construction, making it possible for the operator to turn off the current without loss of time.

The animal is prepared as indicated in my prior paper, care being exercised that the regions are well shaven at the contact points and the electrodes being maintained at a proper moisture with a saline solution. The cathode is then applied to the forehead and the anode to the abdomen. If sleep is maintained for some length of time the resistance becomes lessened, and the operator should reduce the potential according to requirements.

There are two ways of inducing electric sleep: by abruptly turning on the required potential at once, or by slowly turning on the current, beginning with a minimum potential and increasing it gradually. I prefer the slow method, because it is always necessary to regulate the potential, whether the abrupt or progressive method is used and because there are motor disturbances in both instances, the animal "falling asleep" only when the required potential is turned on—after regulation of a too high or too low potential.

The preliminary contractions seem to be painless, because the animal does not cry out, as it does under other circumstances, of which I shall treat at some future time. There is always some motor and respiratory perturbation at the moment of closure of the current: the animal falls on its side, stops breathing and convulses. The breathing is soon resumed, but the contractions keep up until the proper conditions are fulfilled, as already explained. The hind limbs are the first to stop convulsing, and the fore limbs may sometimes continue to show fine tremors during the entire course of the experiment. Technical imperfections are often responsible for this disturbance.

General and special sensibility and consciousness are abolished in the order mentioned. When fully under the influence of the current, the animal may be picked up by a fold of its skin, turned from side to side, pinched or pricked without provoking any reaction on its part. Hearing and sight are abolished, and the eyeballs are turned outward (*). The condition of the pupils is yet

* Dr. Z. Treves. Observations sur les mouvements de l'oeil chez les animaux durant la narcose, *Arch. Italiennes de Biologie*, Vol. XXIII, N. 3, 1905.

to be studied. The animal remains limp and senseless so long as the current is kept up, sleep being immediately interrupted by the opening of the circuit. Once awake, the animal shows no untoward symptoms. I have records of a large number of these experiments made in Professor Leduc's laboratory, but in none have I observed any objectionable manifestations. In some instances I subjected the same animal to the experiment several times during the same day, maintaining the current for from twenty minutes to one-half hour without causing the animal any apparent discomfort or fatigue. Professor Leduc, Professor Rouxau and myself subjected one animal to electric sleep during a period of three hours and ten minutes, without having caused it any discomfort. Prof. Leduc has himself performed the experiment on dogs over one hundred times and on rabbits a good many times, obtaining good results in all the cases. He has studied the current in its various phases, and cautions against its application for the purpose in question with a lower frequency of interruptions. A higher frequency is also useless. While handling various interrupters in this work, I had occasion to verify these statements. This peculiar condition, easy to grasp on mathematical grounds, is as yet to be explained from the physiological point of view. Pending such an explanation, an important field for study of cerebral function seems to be opened by these facts.

CARDIAC BEATS AND RESPIRATION.—The tracings of the cardiac beats and respiration of the animal during this sleep were obtained with Prof. Rouxau's apparatus. The tracings show that the cardiac beats and respiration are regular throughout the course of the experiment (only a small portion of the tracings is published with this paper). It need hardly be mentioned that the animal remained free from all restraint during sleep.

We obtained tracings some forty-eight meters in length during the time of the experiment. The specimen of the tracings shown in this paper is not as perfect as are some parts of the tracings. Unfortunately, the better tracings were obtained in the form of extremely close registration that does not lend itself to reproduction. The specimen published with this paper, however, gives a clear idea of the regularity of the cardiac beats and respiration during this sleep.

EFFECT ON MAN.—Prof. Leduc submitted himself to the experiment, and the description he gives of his sensations during this sleep is cited below in part.

"Although disagreeable, one can readily stand the sensation

produced by the excitation of the superficial nerves, as this sensation gradually dies away in the same manner as does the sensation produced by a continuous current: after reaching its maximum, the disagreeable sensation commences to wane, although the potential is still increasing. The face is red, and slight contractions are visible upon it, as well as on the neck and even the forearms; there are also some fibrillary twitchings, and tingling sensations extend to the hands and tips of the fingers as well as to the feet and toes. As regards cerebral inhibition, the centre of speech is first to be affected, then the motor centres become completely inhibited. There is impossibility of reaction even to the most painful excitations. At this stage it becomes impossible to communicate with the experimenter. Without being in a condition of complete resolution the limbs present no rigidity. Some groans are emitted, but not on account of any pain; excitation of the laryngeal muscles seems to cause the sound. The pulse remains unaltered, but respiration is somewhat disturbed. The current was gradually increased to 35 volts, and its intensity in the interrupted circuit was 4 milliamperes. When the maximum of the current was turned on I could still hear, as if in a dream, what was being said by those near me. I was conscious of my powerlessness to communicate with my colleagues. I still retained consciousness of contact, pinching and pricking in the forearm, but the sensations were stunted, like those in a limb that is "asleep." The most painful impression was that of following the gradual dissociation and successive disappearance of the faculties. This impression was similar to that experienced in a nightmare, in which one feels powerless to cry out for help or to run away when facing great danger."

Prof. Leduc regrets very much that his colleagues did not increase the current sufficiently for complete suppression of sensibility and inhibition of consciousness. The experiment was performed twice, lasting twenty minutes each time. In both instances awakening was spontaneous, without there being any untoward feelings. On the contrary, he had a feeling of well-being (*).

As the experiment on Prof. Leduc was not complete, it may be of interest to remark that anesthesia is absolute when a current of sufficient potential is used. I experienced myself complete anesthesia of the forearm, hand and fingers from a local application on the forearm of this current, 25 volts being used. The sensation of tingling in the limb was very much like that described by Prof. Leduc. I shut my eyes, and he touched my hand, pinched and

* *Arch. d'Électricité Médicale*, July 15, 1903.

pricked it without my being at all conscious of what he was doing. Anesthesia was complete.

This method seems to open a vast field for the study of cerebral function.

I presented the experiment on rabbits at the *Vth International Congress of Psychology*, held in Rome, Italy, April 26-30, 1905, and had occasion to make some comparative observations as regards the effect of this current. While I am not prepared to make any positive assertions, it may be of interest to note that I found the rabbits in Rome far more susceptible to this operation than were those in Nantes, France, a smaller potential being necessary to produce sleep in the former. Generally speaking, young rabbits are far more susceptible to the operation than are old ones. The influence of size among animals of the same species may be said to be nil as compared with age. Thus, a young rabbit, twice the size of an older one was put to sleep with about two-thirds of the current required for the older animal, and besides, the younger one showed much deeper cerebral inhibition. Climatic and other conditions are probably responsible for the marked susceptibility of the rabbits of Southern Europe.

EXPLANATION OF THE TRACINGS.

The current presents the following characteristics: $5\frac{1}{2}$ volts, 1.3 milliampères, 110 interruptions per second and period $1/10$.

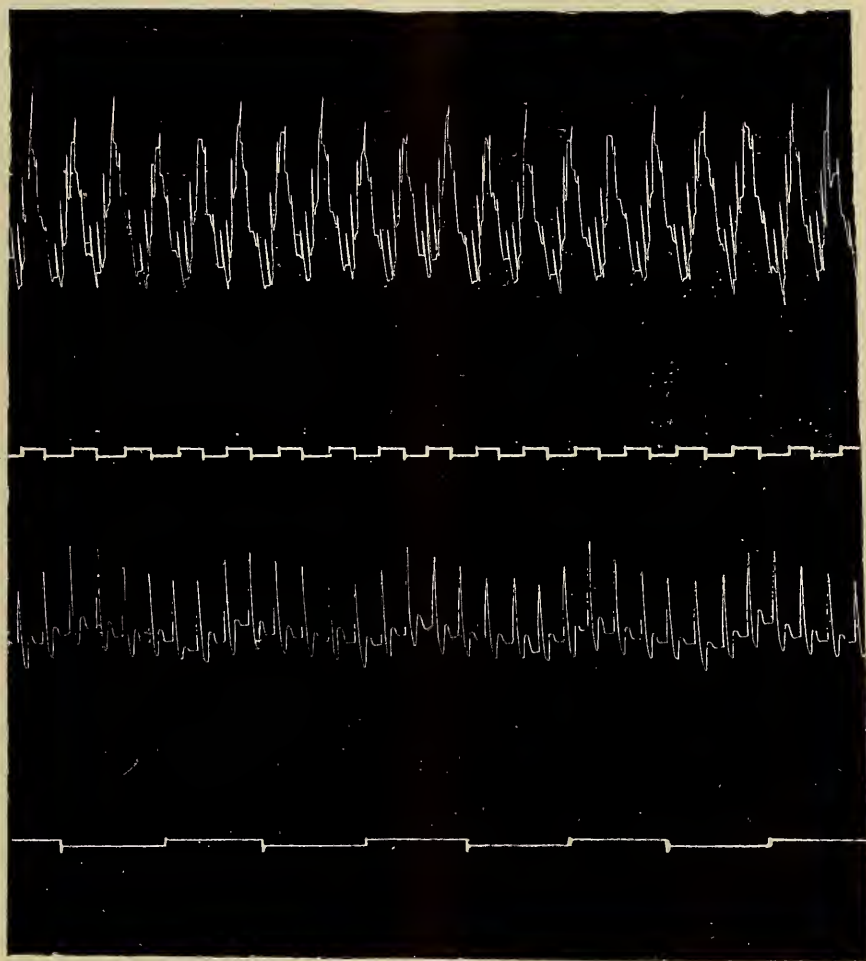
The animal is free, without any restraint, lying on its side.

The Cardiograph (Prof. Rouxeau's model) was applied as soon as inhibition of voluntary motility was obtained.

The tracing expresses both the cardiac beats and respiratory movements. It shows that during electric sleep both the cardiac and respiratory rhythms remain pretty nearly similar to those found during the normal state, with the exception that the amplitude of the respiration is more marked and particularly masks the cardiac beats (compare with tracings taken on the same animal some time after the experiment).

The state of inhibition of voluntary motility obtained by the passage of the current was maintained during a period of 3 hours and 10 minutes, the current being discontinued after an accidental loosening of one of the conducting wires. Some of the imperfections seen in the tracings were due, no doubt, to the imperfect fixation of the wires (only a sample of the tracings is published here, the entire registration comprising some forty-eight meters in length).

From the Physiological Laboratory, School of Medicine, Nantes.



TRACE NO. 2.

TRACE NO. 1.

Trace No. 1 shows the normal cardiac beats and respiration.

Trace No. 2 shows the cardiac beats and respiration during "electric sleep."

The range of registration is closer in No. 2, as is indicated by the time registration.

I take this opportunity to express my thanks to Professors Leduc and Rouxau for their kindness in having made it possible for me to prepare the material presented in part in this paper. I also express my deep appreciation of the kindness shown me in Rome, in the matter of gathering the necessary instruments for presenting the experiment at the Congress. Some of those who directly helped me make the collection of the instruments were: Prof. M. Ascoli, of the *Scuola d'Appl. per gli Ingegneri*, and his assistant, Privat-Docent, Dr. Ricardo Manzetti. Prof. Luigi Luciani, and his assistant, Privat-Docent, Dr. Ducceschi; Prof. Mingazzini and Prof. Sante De Sanctis.

To Dr. Manzetti I am especially indebted for his personal assistance rendered both in testing the instruments and in demonstrating the experiment.

I also owe a debt of gratitude to the German firm of Reiniger, Gebbert and Schall, of Erlangen, Germany, who, at their own expense, shipped to Rome the instruments I needed, but which the railroad strike in Italy last April prevented from reaching me before the end of the Congress.

THE JOURNAL OF MENTAL PATHOLOGY.

Edited by LOUISE G. ROBINOVITCH, B. ÈS L., M.D.

VOL. VII.

1905.

No. 4.

STATE PRESS, PUBLISHERS,
NEW YORK.

MSS. and Communications should be addressed to the Editor,
28 West 126th Street, New York.

Address bulky mail matter to P. O. Box 1023, New York.

This Journal is published bi-monthly, except in August and September.
Price of subscription, \$2.50 per annum. Single copies, 50 cents.

Original researches and other MSS. will be carefully considered, and if found unsuitable will be returned, if accompanied by stamped, self-addressed envelope.

SIGN OF CIVILIZATION.

The ancient peoples attached little importance to life, as the latter was considered to consist of two elements constantly at war with each other—the body and the soul. The soul was considered the worthier of the two elements, whereas the body was looked upon as the source of all earthly ills. Buddha concluded from his observations of life that “from head to foot man was born of filth and eliminated from his body nothing but filth.” This point of view led him to put the question: “where is the man, who, having learned all this, does not consider his own body harmful to himself?” According to this philosophy, death and suicide did not shorten life but only helped the soul to migrate into a better world. Buddha’s followers and many other philosophers held similar views, and the ancient peoples who followed these teachings not only became fearless of death, but looked on suicide as an act of courage, valor and duty. This point of view, no doubt, made it possible for the Dervishes to calmly commit suicide by crushing their own skulls, for the Fakirs cheerfully to hang themselves, and the Chinese and the Japanese to sing cheerfully while drowning in boats they purposely caused to founder. The birth of children must have been considered as a divine punishment,

for among the Celts and Gauls it was the custom to signalize the birth of a child by assuming mourning, singing dirges and practicing various lugubrious rites. In the period of our own civilization we seem to take the other extreme: we mourn not the birth, but the non-birth of babies, if a paragraph appearing in the *New York Times*, on November 20, 1905, is to be taken seriously. According to this authority, the Rev. Francis H. Sinclair, of St. Peter's and St. Paul's Roman Catholic Church, Rochester, N. Y., had the baptismal fonts in his church draped in mourning, as a protest against the dearth of births in his parish, no infant having been presented for baptism for six weeks.

A PROSPECTIVE LESSON IN PRACTICAL PSYCHOLOGY.

Remarking editorially on the proclamation of the manifesto in Russia, October 17, 1905, *Medizinskoje Obozrenie*, No. 18, 1905, says, in part:

"Inviolability of person and freedom of speech are at last realized in our dear Fatherland, and despotic power, from which Russia has suffered so much, has finally seen its last day. Honor, glory and deep gratitude to those who have made us their debtors for this day! Many among them were physicians!"

Honor, glory and deep gratitude, indeed, to all in general and to the physicians in particular, for the above blessings in perspective. But the physicians' task is as yet not finished. Great as the present achievement is, he has before him a much greater achievement to attain,—that of teaching the peasant and the Cossack the meaning of the blessings promised in the manifesto, and above all—that wholesale slaughter of defenseless and innocent people is not the proper expression of gratitude for prospective inviolability of person and freedom of speech.

Honor, glory and gratitude is due to the psychiatrist for having taught and for still teaching how to thwart the evil deeds of the homicidal imbecile, while maintaining the inviolability of person of his brother imbecile. But greater honor, glory and deep gratitude awaits the Russian physician who will go right ahead teaching the precious right to inviolability of person and freedom of speech regardless of nationality or creed among the so-called sane people.

SHOCKED BY 13,500 VOLTS AND LIVES.

Frederick Hendershot, 26 years old, of East Orange, N. J., is said to have been shocked by an electric current of 13,500 volts while engaged in the attempt to turn on the current at the Public

Service Corporation's power house with his bare hand. The shock turned him completely around and caused him to fall, his head striking the switch. His fellow workmen found him lying unconscious. He was revived and taken to the Newark City Hospital, in a critical condition.

Under the above circumstance it is impossible to know how long the current had passed through the man's body. Besides, if the man dies eventually, an autopsy alone can determine whether or not the fall caused a serious enough trauma of the head to cause death. Without any complications, survival after receiving a shock from the passage of 13,500 volts through the human body is of great interest in itself.

THE CAUSE OF COLLECTIVE HOMICIDE.

Buddhism, Confucianism *et al.*, are not on trial. Heed not the wholesale human slaughters caused by the respective religionists. Mohammedism is not on trial. Heed not the slaughter of Armenians and others. Christianity "is not on trial" (Mr. George Dobseavage, in *New York Times*, Nov. 13, 1905). Heed not the wholesale slaughter of the Jews far surpassing in enormity to-day all other slaughters known in history. No, religion is not on trial. It is poor human nature that is on trial, regardless of its religious garb.

THE COST OF IMPERIAL DIFFERENCES.

According to a statement made by the Japanese Minister of War at Tokio, Nov. 12, Japan had, at one time during the course of the Russo-Japanese war, 1,200,000 troops under arms. Of this number 70,000 died and 310,000 were wounded or became ill; only 15,000 died from sickness and 9,800 from wounds after coming under treatment.

Russia's official statement of the number of her dead and wounded is as yet to be learned.

THE CORRECT WEIGHT OF PROF. TAGUCHI'S BRAIN.

In Vol. VII, No. 3, p. 156, of this Journal, it was stated that Prof. Taguchi's brain weighed 1,520 grams, according to information of one publication, but that according to another publication the weight was 1,920 grams. The correct weight is the first—1,520 grams, as stated in *Science*, Vol. XX, p. 215, and *American Anthropologist*, Vol. VI, pp. 577-578, 1904.

We are indebted to Dr. E. A. Spitzka for calling our attention to this fact.

TRANSLATIONS AND ABSTRACTS OF CURRENT LITERATURE.

An Area of Endemic Goître in the Philippine Islands.—DR. LOUIS C. DUNCAN: goître is generally endemic in mountainous regions. In North America there are goître areas in the hilly regions about Lake Superior, in the Black Hills of Dakota and on the Plateau of Mexico. In Europe, cretinism and goître areas are common in Switzerland, the Tyrol, Valois and other high regions of the Alps and their outlying ridges. In Asia, goître is endemic in the Himalayan and other elevated regions, and in South America, in the Andean backbone of the continent. A recent medical traveler in Abyssinia saw many cases of goître on the plateaus over 4,000 feet high, but none in the lowlands. The author has seen endemic goître in one of the regions of the lowlands in the Philippine Islands—in the Municipality of Macabebe. The Municipality of Macabebe is situated on the northeast shore of Manila Bay and occupies the delta of the Rio Grande de la Pampanga, the second largest river in Luzon. This delta, some 10 by 12 miles in extent, is but a few feet above the sea-level and cut into innumerable islands by a veritable network of streams, the mouths and submouths of the river, that, on nearing the bay, branches out like a tree. The entire area is so low that the streams are subject to tidal flow, and the lands may be irrigated at any time of the year. In time of high water the whole country is afloat, only the higher dykes and the stilted houses appearing above the surface of a vast lake. Even at the end of the rainy season the delta appears much like a flooded American river bottom. The soil is exceedingly rich, fruits grow in profusion, and two or more crops of rice are raised in a year. The Macabebes form a tribe of about 25,000 people, small as compared with the million and one-half of Tagalos or the eight million persons of the whole archipelago. They occupy a single municipality, corresponding to a township in the United States. There are no separate farmhouses, but all the houses of a given village form one long, winding street for a half a mile to a mile, following the course of the stream. The worst feature of the country is the lack of potable water. A well sunk a few feet at any place will strike water, but it is salty and undrinkable. The inhabitants are dependent on the streams, and fresh water can only be obtained from them when the tide is lowest, and even then it probably contains some salt. These streams are the sewers of the many towns on their banks, as well as the source of water supply. The water is muddy and foul. Standing by a stream one sees a native filling a vessel with water for drink-

ing and cooking, while a few yards away another is emptying refuse and excreta into the same current, which now and then bears slowly by the inflated body of a dead pig or dog. Cholera and smallpox are prevalent among the Macabebes, not less than three-fourths of the adults bearing marks of the disease, and an excessive number are blind in one or both eyes. The most noticeable disfigurement, however, is goître. On the street, at church, in the homes, everywhere one sees women with enlarged thyroids. Often two are seen in one family. The author counted nine during a short walk on the street. Occasionally a man is seen with goître. The author says he did not see any case of cretinism or exophthalmic goître. The tumors are not usually large, but are the more noticeable because a tumor of any description is seldom seen in the Philippine Islands. The author has not seen any other areas of endemic goître, but says that they may possibly exist. Roughly estimated, the proportion of subjects with goître is given as 20 per 1,000 of the population. The author is the first to call attention to the existence of endemic goître in flatlands, although it is said that there are goître areas in the flat, marshy regions of Western Russia. It is supposed that the active agent producing goître, whether chemical or bacterial, is found in the drinking water. The conditions favorable to goître are all found in Macabebe, but they are also found in other parts of the islands where the disease does not exist. There must, therefore, be some unknown factor present (*American Medicine*, Nov. 18, 1905).

The Sense of Pain.—MLLE. J. IOTAYKO: in one of the chapters of her masterly report to the *First Belgian Congress on Neurology and Psychiatry*, the author considers pain according to sex, age, race, profession, pathologic conditions and in animals. By a series of experiments the author proves what Mantegazza has said about pain. The conditions aggravating the feeling of pain are: exquisite sensibility, high intelligence, superiority of race and high degree of civilization, feminine sex, childhood and adolescence, a marked degree of heat, use or abuse of coffee, and a sudden transition from pleasure to pain. There is some controversy among authors as regards the meaning and degree of responsiveness to pain by man and woman respectively. According to some authors, woman is more sensitive to pain and is looked on as being inferior to man in this respect; according to others, on the contrary, woman is less sensitive to pain than is man, and her sensitive inferiority is pointed out against her. The unit for comparison is the lowest animal form that is not quite as sensitive to

pain as man is. The author demonstrates that woman resists pain better than does man. Ottolenghi concludes from this that she feels pain less than does man, but Mlle. Ioteiko says that woman resists pain better because she has more will power than man has in this respect. Woman can resist the discomfort caused by a current of 250 volts, whereas a current of 20 volts is the medium supportable quantity. Man, however, cannot stand more than 10 volts, no matter how much will power he invokes to help him stand more. The superiority of woman's will power is also indicated, according to the author, in the fact that women commit suicide much less than do men, because women stand physical pain more bravely than do men.

According to Richet, the sensibility to pain of idiots, imbeciles and senile demented is stunted. According to Ley, sensibility to pain caused by electric currents is less marked in feeble minded than in normal children. Dolorific sensibility is also below par in general paralytics. In normal subjects heat causes pain at a lower temperature than in prostitutes (at 64 degrees C.), criminal women (at 61 degrees C.) and especially in criminal men (at 76 degrees C.). According to Nardelli there are two distinct paths for the transmission of heat and of pain, but there are no different nerves for this transmission. The latter author thus formulates the conditions of sensibility to pain in various pathologic conditions:

Paranoid subjects present augmented sensibility to heat and decreased sensibility to cold.

In melancholic women sensibility to heat is decreased (pain being perceived at 145 degrees C.), while initial sensibility to cold is markedly increased. According to the author, the thermic hypoesthesia is due to the mental preoccupation of these patients.

Paralytic demented present similar thermic hypoesthesia, but dolorific sensibility remains almost normal. Mlle. Ioteiko considers the above dissociation as an indication that there is a special dolorific sense.

In three subjects with hemiplegia the sensation of pain and heat was retarded on the paralyzed side, while the same test showed an increased reaction on the healthy side.

Experiments on animals show that reaction to pain does not depend on consciousness (a decapitated frog reacting as vigorously as does a live one), as there may be reaction when consciousness is abolished, the main reason of the reaction being that of self-defense. As the function of pain is that of self-defense based on reason and consciousness, the author concludes, pain is intimately connected with the higher psychic manifestations. The

difficulty of supporting pain makes us consider its duration extremely long as compared with that of pleasure, and the mental impressions left by pain are, therefore, better engraved in our minds than are those of pleasure. The rôle of physical pain as an educator is self evident (*Journal de Neurologie*, Oct. 5-20, 1905).

Some Results of a Study of Variation and Correlation in Brain Weights.—RAYMOND PEARL: the differences between different races in respect to weight of brain are only in part to be accounted for by differences in other characters of the body. Two of the races studied (Swedish and Hessian) are sensibly alike in mean brain weight. These are the two races out of the four studied which on other grounds are thought to be most closely related ethnically. Differences in mean brain weight in different races are not to be accounted for solely by differences in other characters. Even after Hessians, Bavarians and Bohemians are put on the same basis with reference to sex, age and stature they still exhibit considerable differences in the weight of the brain. As a rule, the higher the mean brain weight is, the lower the variability. All brain weight statistics agree in showing that the brain of the male is absolutely heavier than is that of the female. The diminution in brain weight accompanying increase in age is steady and uniform throughout the adult period of life. Beginning with about age 20 there is a steady and uniform decline in brain weight with advancing years, up to age 80 that was the upper limit of the period investigated. For all practical purposes the regression may be taken to be strictly linear. The increased line of decline of brain weight beginning at about 50, was not found as expected. The correlation between brain weight and age is in all series examined, except the Swedish, higher for the females than for the males. This may be due to the generally more even environmental conditions to which women are subjected. The correlation of brain weight with body weight is positive, and of about the same degree as the correlation of the former with stature. The regression approaches somewhat more closely to strict linearity in the case of body weight than in the case of stature. A unit change in body weight is associated with a smaller change in brain weight than is a unit change in stature. The correlations between brain weight and skull length and breadth are positive and give the highest values for the coefficients of any of those studied. For certain reasons it seems possible that the values obtained for these correlations from the Bohemian statistics are still somewhat too low. The correlation between brain weight and skull length and breadth is

somewhat less close than is that between skull capacity and length and breadth. The cerebral hemispheres are markedly more variable in weight than is the entire encephalon. This character is slightly less closely correlated with stature and age than is the weight of the entire encephalon. Regarding the mean brain weight of different races, there are definite laws underlying variation in the weight of the brain that are not fundamentally different from the laws of variation for the other characters of the body. There is no evidence that intellectual ability and the weight of the brain are in any degree correlated in normal individuals (*The Journal of Comparative Neurology and Psychology*, Nov., 1905).

A Case of Cysticercus in the Aqueduct of Sylvius.—DR. ZEMBLINOV: the case had been observed in the Saratoff City Hospital. The patient was an officer of the army, 40 years of age, and had been subject to severe headaches for four years. He had never had any spells of loss of consciousness or of epileptiform convulsions. Nor had he had any cardiac, respiratory, visual or auditory disturbances. When admitted to the hospital, June 23, 1884, the patient was suffering from severe general headaches. The pain in the head was constant, but somewhat less severe for a couple of hours toward evening. There were frequent spells of hiccoughs and at rare intervals bilious vomiting. The motor apparatus of the eyes seemed normal on a superficial examination. The pupils were of medium size and reacted well. The number of respirations per minute was not noted. The patient did not complain of any vertigo until about one-half hour before death, when he complained of severe vertigo, nausea and darkness before his eyes. He died suddenly without having had any convulsions or other disturbances of note.

Autopsy: there was a slight scar of the liver; a cyst of the right kidney, in its upper part, the size of a walnut, adherent to the substance of the kidney. Findings in the brain: marked tension of the dura mater of the parietal region; in the left posterior parietal region the dura mater was adherent to the pia mater. The pia mater was slightly thickened at the bases of the large fissures. The convolutions were flattened. No edema. The lateral and third ventricles were considerably distended with fluid, the posterior horns being three times their normal size. The foramen of Monro was considerably distended. The choroid plexus was thickened and the pineal gland lost in its thickened folds. The ventricular ependyma was thickened and the central ganglia flattened. The choroid plexus was bluish pale, having four small

cysts in it. On removal of the choroid plexus it was seen that the corpora quadrigemina were flattened, the right being separated from the left ones; in the direction of the third ventricle, a cyst, the size of a large pea, protruded from the aqueduct of Sylvius. The protruding mass was part of a cysticercus with its head, the larger part filling and distending the cavity of the fourth ventricle. The shape of the cyst as it was found was that of a bottle, the belly of which filled the fourth ventricle, while the neck was inside the aqueduct of Sylvius. The diameters of the distended fourth ventricle were: 28 mm. transversely and 35 mm. longitudinally. When put into a dish of water, the cyst assumed a regular shape. The walls of the aqueduct of Sylvius were thin and the duct itself wide and short, but the lining of the fourth ventricle seemed to be normal. The author supposes that the scar in the liver points to an old cysticercus there, and the cyst in the kidney are traces of undeveloped hydatid cysts. The author calls attention to the apparent tolerance of the most vital part of the brain, and suggests that possibly the cyst had made its way into the cavity of the fourth ventricle just before death took place, the head of the cyst at the same time occluding the aqueduct of Sylvius (*Mediziniskoje Obozrenie*, No. 18, 1905).

Some Considerations on the Treatment of Mental Diseases.

—DR. J. CHRISTIAN: the author disapproves of the colony treatment for the chronic insane, taking the results of the treatment at Dun-sur-Auron as proofs against the utility of the new method of housing the insane. In the report for 1902 of that colony, it is stated that there had been 931 patients; 2 committed suicide, 61 had escaped, 180 had changed abodes, 52 had to be returned to asylum, 140 had to be placed in the infirmary, the total of incidents amounting to 435, or 46 per cent. The author sees a marked disadvantage in the lax handling of chronic insane, that necessarily prevails in the colonies, the patients having free access to drink shops all over the village. According to the author, the farm attached to the asylum is far more advantageous than the colony system, in which he sees nothing but an imperfect substitute for a real asylum. In a spirited style, he also makes a vigorous attack on the new modes of treating the acute insane: we pride ourselves on having instituted non-restraint, but is it non-restraint to keep a patient with an acute psychosis in a bath for from six to eighteen months without interruption? Yet this is the treatment administered by Kraepelin to his patients at the Heidelberg Clinic. Attendants constantly watch the aquatic life of the patients, using gentle suasion when the patient becomes unruly.

The author underscores the words gentle suasion, saying that the gentleness can easily be appreciated by the black and blue marks on the patient's arms. Besides, the patients are also subjected to large doses of hyoscyamin. The patient's hands and feet are covered with a layer of some greasy matter to prevent maceration of the skin, and the physician prides himself on being enabled to keep a patient in the bath tub for as long a period of time as 18 months, without ever removing him from the tub during that time. But, the author asks, is not such treatment restraint many times over, and would it not be more humane to allow such patients the privilege of breathing fresh air in the court yard or in the ward rather than the damp air of the stuffy bath room rendered foul by the patients' excreta in the bath tubs? Some critical remarks are also made on bed treatment when carried to the extreme (*Annales Médico-Psychologiques*, No. 3, 1905).

Locomotor Ataxia Successfully Treated with Ultra-Violet Rays.—DR. J. MONROE LIEBERMAN: satisfactory results have been obtained in 36 cases of locomotor ataxia, including 34 men and 2 women, between the ages of from 24 to 36. Four of these cases have been restored to good health and are now able to resume their usual avocations. Twelve have been greatly benefited, the power of coordination restored, pain abolished and the ability to use the upper and lower limbs without any assistance established. All are able to rise, dress and undress themselves without any help and are sometimes able to perform such delicate operations as fixing neckties or tying their shoes in a stooping position. In eighteen cases the disease is apparently arrested, with hope of further improvement and final restoration of different functions. Two died during treatment, one from lobar pneumonia, the other of erysipelas of the head. The patients had had different forms of treatment for years before the present treatment was instituted. One characteristic and almost invariable effect of the treatment with the ultra-violet rays in combination with the electric stimulation of the peripheral nerves and their end-organs, is the improved general nutrition of the patient. All the patients thus treated rapidly increase in weight and improve in general health. To facilitate these results it is all-important to maintain the normal alkalinity of the blood and secretions throughout the course of the treatment. The items of the treatment are: 1, a warm, half-bath at night before going to bed, with light massage; 2, ultra-violet rays in sittings of from ten to thirty minutes, three times a week; 3, static electricity by means of the Morton wave current or wooden brush, daily, 15 to 25 minutes. Particular

stress is laid on the necessity of dehematization that alone permits the penetration of the rays through the skin. The author suggests the theory that the powerful stimulating effect of the ultra-violet rays induces more activity in the natural healthy cells and diminishes the nutrition of connective tissue, setting up a more active local metabolism (*Archives of Physiological Therapy*, Oct., 1905).

Variation in Relation to the Origin of Insanity and Allied Neuroses.—DR. JOHN MACPHERSON: a clinical classification of insanity, in the present state of our knowledge, is the only possible one. General paralysis is only accidentally an insanity. As a rule, organic diseases of the nervous system are not attended by mental disturbances. This disease, however, is an exception in so far as it attacks the cerebral cortex—the seat of manifestation of conscious mind. The disease differs from ordinary forms of confusional insanity in that its localization of attack is limited to certain parts of the brain cortex and in the degree and severity of its virulence. The poison causing this disease is so virulent that it affects almost every tissue in the body. Probably some specific microorganisms are the cause of the disease, and the syphilitic poison renders resistance impossible. Confusional insanities are due to toxemia, as shown by Dr. Bruce's researches into the numerical variation of polymorphonuclear cells in various psychoses: there is an increase of this number in some psychoses. According to Dr. Bruce's investigations, showing a significant variation of the number of polymorphonuclear cells in the periodic groups of insanities as well as in some forms of confusional insanities, a toxine in the blood may be incriminated as the actual cause of the troubles. In paranoia there is no hyperleucocytosis and no toxemia—so far as is known. The neuropathic constitution implies three things: structural variation from the normal type of cerebral architecture, leading to a gross difference in the size and arrangement of the nerve cells, or both; 2, structural variation in the form and function of various bodily organs; and 3, a diminished power of immunity on the part of the body tissues against invasion by toxins and the products of microorganisms (*The Journal of Mental Science*, April, 1905).

Contribution to the Study of the Physiology of the Thyroid Gland.—DR. PETROVSKI: ablation of the thyroid gland is followed by lowering of the metabolic process; consequently, the function of the thyroid gland must consist of aiding the metabolic processes of the economy. Suspension of the thyro-metabolic

function is followed by attacks of tetany, and these attacks must be manifestations of self-defence. That purpose is not achieved, however; under the influence of tetanic attacks there is mostly an increase in the nitrogeous metabolism, while that of phosphorus and fatty substances remains impaired. As the metabolism of the substances entering into the structure of the nervous system is mostly impaired by thyroidectomy, it follows that the operation injures particularly the biochemical processes of the nervous system. It cannot be said, however, that the function of the thyroid body is intended to protect the metabolism of the nervous system exclusively; phosphorus and fatty substances also enter into the structure of other organs. Most probably the thyroid secretions help the process of oxidation in the tissues and promote the process of absorption of carbonic acid gas. Andriezen holds similar views on the subject, saying that thyroidectomy should decrease the amount of carbonic acid gas. Albertoni and Tizzoni, indeed, demonstrated that the amount of carbonic acid gas in the blood is considerably decreased after thyroidectomy. The blood of animals with ablated thyroid glands is strongly venous in nature (*Voprossi Nervno-Psychitcheskoi Medizini*, April-June, 1904).

From the American Journal of Insanity, No. 1, 1905:

1. The Insane in Canada. Presidential Address.—DR. T. J. W. BURGESS: the history of the evolution of the Canadian Asylum system is considered, leading up to the status of recent years. In 1901, according to the census of that year, there were in the Dominion of Canada 16,622 insane, being a ratio of 3.125 per thousand, or about one in every 319 of a population numbering 5,318,606 souls, exclusive of the unorganized territories. The Provinces as regards the number of their insane stood as follows: Prince Edward Island, 361—a proportion of 3.496 per 1,000; Ontario, 7,552, or 3.459 per 1,000; New Brunswick, 1,064, or 3.213 per 1,000; Quebec, 5,297, or 3.212 per 1,000; Nova Scotia, 1,403, or 3.052 per 1,000; Manitoba, 464, or 1.818 per 1,000; British Columbia, 301, or 1.684 per 1,000; Northwest Territories, 180, or 1.132 per 1,000. Canada shows a decided increase in the percentage of her insane population. According to the census of 1891, there were 13,342 insane persons in a population of 4,719,893. In 1901, there were 16,662 in a population of 5,318,606, being an increase, in ten years, of nearly twenty-five per cent. of the insane, while the increase in the total population was less than 13 per cent. Stress of life and immigration are the causes of the increase of insanity. The author believes that insanity could be prevented by limiting propagation among the predisposed and

degenerate. Exclusion of defective immigrants would also lessen the increase of insanity in Canada. Canada is being made a "dumping ground" for the degenerates of Europe. In 1901, the population of Canada was 5,371,315, the number of foreign born being 699,500. The total of the insane was 16,622, of which 2,878 were foreigners. This shows that there is one insane to every 339 natives, while the proportion among the foreign element alone is one to every 243. Speaking of the care of the insane, the author deplores the system of appointing medical officers in the hospitals for the insane in Canada. The "spoils doctrine," according to which "office is a reward for political service," has done much to keep down the progress of scientific work in the Canadian hospitals for the insane. Merit has had little weight, especially in Ontario, as against "political pull," the result being that almost 2/3 of the hospitals for the insane are directed by superintendents destitute of any training prior to their appointments.

2. Cytodiagnosis in Psychiatry.—DR. CLARENCE B. FARRAR: in the early stages of general paralysis cytodiagnosis is of much value and was particularly pointed out by Professor Joffroy, in the *Journal of Mental Pathology*, a few years ago. Under normal circumstances the liquid is crystal clear and contains no formed elements; at most there may be found a lymphocyte or two in one immersion field. In paresis and in tabes dorsalis lymphocytosis is the rule. The reaction indicates a subacute or chronic process, just as leucocytosis or polynucleosis, as it is often called, is an indication of an acute process. The difference is well shown in the various forms of meningitis. Thus, in acute meningitis polynucleosis is regularly observed, while in chronic forms, such as tubercular or luetic meningitis and meningomyelitis, lymphocytosis is the rule. In a word, acute conditions are characterized by the presence in the fluid of polynuclear leucocytes, while chronic conditions—by the presence of lymphocytes. In paresis and tabes lymphocytosis may be present at all stages, is particularly constant during the initial period, and may be observed late in the terminal stage. Leucocytosis may be observed mostly: in acute congestive or inflammatory processes of the meninges, in cases of epidemic cerebro-spinal meningitis and in those of brain abscesses. Lymphocytosis:—in general paralysis, tabes dorsalis, cerebro-spinal syphilis, including syphilitic meningitis, myelitis and meningo-myelitis, finally, in tubercular meningitis. The conditions furnishing negative cytological findings are: functional psychoses, hysteriform and neurasthenic states, alcoholic insanities, involutional forms, degenerative types, choreic insanity, and the manico-

depressive and dementia precox groups. Otherwise, practically, every case with Argyll-Robertson pupil presents also lymphocytosis. The author points out Nissl's experiments of tapping the cerebro-spinal fluid in normal subjects, and the untoward results that may take place even some five hours after the operation. Patients operated on should remain in the horizontal posture until they feel completely fit to resume work.

3. Extension of Tent Treatment to Additional Classes of the Insane.—DRS. C. F. HAVILAND AND CH. L. CARLISLE: the tubercular patients derive great benefit from tent life all the year around. One tubercular insane doubled his weight after 14 months of tent life, increasing from 83 pounds, on admission, to 166 pounds. Many improvements have been made in the tents, such as inserting windows and putting the whole tent on wheels, so that plenty of light may be obtained and sun baths had during the day. Tent treatment has also been desirable for the filthy insane and other invalids; the fresh air by day and night is beneficial for such patients. In cold weather, the temperature of the interior of the tents was maintained at from 60 to 65 degrees F. by means of two large coal stoves in each tent. The temperature could be made higher, but the above temperature has been found most beneficial as it whips up the patient's appetite.

4. Korsakoff's Psychosis. Report of Cases—DR. ARTHUR W. HURD: 5 cases of this psychosis are presented.

Results of the Practical Abolition of Capital Punishment in Belgium.—MAYNARD SHIPLEY: whereas the annual average of capital condemnations during the thirty-five years 1831-65 was 9.28, the last execution occurring in 1863, the annual average of condemnations during the thirty-five years ending with 1900, the annual average of capital condemnations falls to 5.2, the lowest in the history of the kingdom, while in 1900 there were but two persons condemned for capital offences in a population of nearly seven millions. And this despite the facts that capital punishment is practically abolished, and that Belgium is, next to China, the most densely populated country in the world, with a larger consumption of alcohol per capita than that of any other nation, with the possible exception of the Danish. The movement for the abolition of capital punishment in Belgium was started in 1827, through the publication of the monograph "*De la mission de la justice humaine et de l'injustice de la peine de mort*," by M. Ed. Ducpétiaux. Public prejudice against capital punishment became so strong that there has been no execution

in Belgium since 1863. Since that day all the ministers of justice have commuted every death sentence to life imprisonment with hard labor. Pleading for the actual abolition of capital punishment, the Belgian Minister of Justice, M. Le Jeune, said that it was certain that the number of great crimes had remained stationary since 1830, and that the cessation of capital punishment since 1863 had in no wise determined its renewal. Notwithstanding the prejudice against the death penalty in Belgium, all efforts to legally abolish it have so far proven fruitless. M. Louis Franck writes: "The restoration of the scaffold in Belgium is an impossibility. The people no longer desire to see men die. All they desire is to be happy in the advanced stage of their morals" (*Quarterly Publication of the American Statistical Association*, Sept., 1905).

Touches a Cable Carrying 22,000 Volts and Lives.—DR. OLDRIGHT: among other cases reported in the *Dominion Medical Monthly*, Aug. 1, 1905, is that of a man who recovered after having touched a cable carrying 22,000 volts. A burn, 4 x 9 inches corresponded to the part of the wet arm that came in contact with the live wire; there were also deep burns on the forearm, a slight one on the abdomen, the sole of the foot was blistered, and the base of the great toe burned to the bone. It is found in such cases that following the burns, the muscles frequently degenerate and slough, even up to their insertions. The best treatment for the burns is a dry antiseptic dressing from the beginning. A tendency to hemorrhage should be expected during the separation of the sloughs. Healing is slow owing to the depth of the burn and the lowered vitality of the tissues. In this case the burns were more than two months in healing, although the sloughs were removed surgically and skin grafting was employed (*Archives of Physiological Therapy*, Oct., 1905).

Concerning the Continuity of the Nerve Cells, and Some Other Matters Connected Therewith.—DR. JOHN TURNER: the conclusions are based on personal observations with the methylene blue and peroxide method, bringing out a pericellular beaded network. According to the author, the latter is the great medium for establishing direct connection between the different cells of the central nervous system. A successful preparation, say from the frontal cortex, shows myriads of delicate beaded fibrils coursing in all directions, some of which can be traced for two or three microns. These threads are as slender as neurofibrils, but usually these latter appear of a perfectly smooth contour. The method

shows a true continuity between the different cells of the cortex; for not only are the intercalary cells joined together by their processes, but also form the beaded pericellular network to which they give rise, fibres passing directly into the axons of the pyramidal cells. In spite of Lugaro's protest, the continuity of the nerve cells of invertebrates by means of neurofibrils is not a special case, but appears to exist universally between the nerve cells of the invertebrates so far as these have yet been studied in this connection. There is great probability that this condition of the nervous system occurs in all animals (*The Journal of Mental Science*, April, 1905).

Epilepsy and Dechloridization.—DR. CH. MIRALLIE: epileptics habitually take a considerable amount of salt with their food. All epileptic patients add salt to the food that is quite salt enough for other patients. One of the author's epileptic patients is in a habit of indulging in salt to a marked degree: whenever possible, she takes a pinch of salt and swallows it. Dechloridization is particularly effective in such cases. The author agrees with others that a diet reduced in salt is beneficial for the epileptics because their nervous systems are thus rendered more susceptible to the action of bromide, much smaller doses than usual giving good results. There is a marked decrease of the number of fits during the period of dechloridization; the number of attacks increases when the usual diet is resumed, but the number does not quite reach the original number of attacks. In some cases, on the contrary, the special diet with reduced salt causes a marked increase in the number of attacks. This the author explains thus: while the nervous cells become more responsive to the action of bromide, they also become more susceptible to other excitant agents, such as wine and alcohol. The group of patients who suffered an increase in the number of fits were employed in the wards of the hospital as houseworkers, and daily rewarded by some wine and alcohol, the harmful effect of which were rapidly shown by the increased number of fits. A milk diet greatly helps reduce the number of fits (*Gazette Médicale de Nantes*, Oct. 14, 1905).

Tabes Dorsalis in Children.—DR. M. S. MARGULES: up to the present date there have been only 23 cases published, the author adding one, which makes in all 24 cases. Of that number, 14 were girls and 10 boys. The author's case is that of a girl, 8 years of age, whose father is a moderate alcoholic and both father and mother are subject to latent syphilis. Atrophy of the optic nerve occurs in 12 per cent. of the cases in general, but in many more

cases in children. Fourteen of the 24 cases described presented marked atrophy of the optic nerve, 4 of the cases showed various stages of that atrophy, while in 6 of the cases there were no alterations of the optic nerve. The course of the cases with this atrophy is particularly chronic, the preataxic period being considerably prolonged. In the author's case, the sclerotic process along the blood vessels was marked. Examination of the eye ground is of the utmost importance for diagnostic purposes. The number of cases of tabes dorsalis among children is small because of the great mortality from syphilis among young children. According to Engel-Reimers, 63.5 per cent. of the children born of syphilitic mothers died under one year of age, 75 per cent. of that number showing distinct signs of syphilis. Not all syphilitics are prospective candidates for tabes dorsalis; possibly severe infections only cause the disease (*Mediziniskoe Obozrenie*, No. 17, 1905).

Inebriety and the So-Called Cures.—DR. JAMES STEWART: inebriety and drunkenness should not be confounded, inebriety being a disease, while drunkenness is a vice. Inebriety is accompanied by changes of the nervous system, especially injuring the centres of memory and will power. Considering the physical damage caused by alcohol, it should not be expected that a "gold cure," hypnotism or injections of apomorphine will cure the patient at short notice—as many chalatans claim to be able to accomplish cures for inebriety. Forty-one per cent. of the cases of both sexes treated at the Dunmurry Home during the last ten years had previously been under the care of "Dr. Topsy" or some other lighting curer of inebriety. In every one of these cases the patient said the benefit was only temporary, the duration of the immunity depending on the occupation or surroundings of the patient after the so-called "cure" had been affected and the condition of the general health. All looked on the expenditure of the "cure" as waste of both time and money. According to the author, the inebriate must for at least twelve months be placed in such surroundings as experience shows are favorable for the carrying out of the work of restoration of the injured brain cells—a work that should not be interrupted, and that cannot go on if alcohol in any quantity, even the smallest, be taken by the patient. The protection of the patient can only be secured in a properly organized "home" (*Bristol Medico-Chirurgical Journal*, June, 1905).

Psychologic and Clinical Study of Echopraxia.—DR. DROMARD: echopraxia is an impulsive or automatic imitation of ges-

tures, the imitation being immediate and characterized by abruptness and promptitude of a reflex nature. Reason or volition do not intervene, as the subject afflicted with echopraxia promptly imitates any act he sees performed, laughing when he sees somebody laugh, crying when he sees somebody cry, throwing himself from any height at which he happens to be when seeing anybody fall from a height, etc. According to Hammond, the disease is known in Yakutsk under the term *miryachit*, in Germany, a similar affection is described under the name of *Schafftrunkenheit*, a special inhibitory enfeeblement favoring all these varieties of echokinesia. The psychology of the disturbance is similar to that causing the manifestation of tics. Extreme susceptibility of the subjects plays an important part in the disturbance. This susceptibility to suggestion is marked in the dement in general and in dementia precox in particular. In the latter dementia the imitative propensity is well known to clinicians. In all these cases there is incontinence of the lower centres while the higher ones fail to act for various reasons, according to the case (*Journal de Psychologie Normale et Pathologique*, No. 5, 1905).

Epileptoid Foot Trepidation and Surgical Anesthesia.—DR. LANNOIS: the various sensibilities, including cutaneous reflex, disappear during the course of anesthesia, but the foot clonus makes an exception to this rule. This clonus appears as soon as the corneal reflex disappears, and the deeper the anesthetic sleep, the more marked is the foot clonus. This clonus is found in $\frac{2}{3}$ of anesthetized subjects well under control of the anesthetic, but in some cases the reaction cannot be obtained even when there is profound anesthetic sleep. The clonus may also appear on one side only. In two cases with cortical lesions the trepidation appeared on the side opposite to that on which the lesion was, but not on the same side. The epileptoid trepidation appears after the onset of complete muscular resolution; hence, there is no correlation between muscular tonicity and foot clonus. It has been suggested that probably there is an intermediary centre between that of the knee reflex and the higher reflexes producing the foot clonus. The author observed as a constant occurrence cessation of the foot clonus in cases where respiration was suspended by some accident. According to the author, the centre of the foot clonus is probably somewhere in the lumbar enlargement of the spinal cord; the reflex is probably produced by excitation of the lumbar cells by the chloroform or ether. Remarking on this reflex, Dr. Crocq said that the phenomenon was of importance and would tend to show that it has been errone-

ously supposed up to the present that exaggeration of the knee reflex coincided with the foot clonus, and that the clonus should not be considered as a necessary accompaniment of exaggerated reflexes. Dr. Lannois claims also to have seen the foot clonus in a case of section of the spinal cord; in a case of Pott's disease he found abolition of the knee reflexes with epileptoid trepidation of the feet. In exophthalmic goitre, typhoid fever and some other affections these conditions are common (*Journal de Neurologie*, Nov. 5, 1905).

The Relative Number of Men and Women.—According to Frau Gnauck-Kuehne, the superfluity of women in so many European countries is rapidly disappearing, and in another twenty years there will be a superfluity of men even in such countries as Germany and England, where at the present time women preponderate. In Luxembourg, in 1890, there were 1,002 women for every 1,000 men, while there are now only 999 women for every 1,000 men. In Austria the proportion has been reduced in the same time from 1,044 to 1,035; in Hungary, from 1,015 to 1,009; in Switzerland, from 1,057 to 1,035; in Sweden, from 1,065 to 1,049; in Germany, from 1,040 to 1,032; in England, from 1,055 to 1,047. She does not believe that any European nation except Russia will long continue to increase rapidly in proportion. England has begun to follow the example of France in the matter of decreased birth rate, and Germany is considered as having begun the downward path of birth rate. In all advanced European countries the birth rate is either becoming stationary or shows a tendency to regression.

Contribution to the Study and Interpretation of Vibrosensibility. —DRS. V. FORLI AND B. BARROVECCHIO: the results obtained by the authors are similar to those obtained by other investigators, differing from them in some particulars. In the aged, the perception of the vibrations of the tuning fork is impaired. The perception is equally marked in men and in women respectively. In one case of *sclérose en plaques*, the vibrosensibility was normal. Rydel and Seiffer obtained opposite results in three such cases. In patients subjected to spinal cocainization there is distinct dissociation between thermo-dolorific anesthesia on the one hand, and conservation of tactile and vibrosensibility, on the other. It may be supposed that the latter two sensibilities are expressions of similar sensory qualities. The deep tissues only perceive the vibrations of the tuning fork (aponeuroses, muscles, bones, peritoneum, omentum). The subjects on whom the ex-

periments were performed were cocainized prior to the application of the tests. It should be possible to learn whether there are disturbances of the deep sensibilities, as explained, while the cutaneous sensibility remains intact (*Annali dell'Istituto Psichiatrico*, Vol. III., No. 2, 1904).

On Hallucinations and Hallucinatory Psychoses.—PROF. G. ANGIOLELLA: the sensorial and sensori-perceptive process represents and constitutes the essential and fundamental basis of all psychic life. Psychic disturbance is therefore due to some pathogenic lesions of the sensorial and sensori-perceptive centres. As alcohol localizes its hallucinatory action in certain centres, so other poisons, the nature of which is not known to us, probably localize their action in given centres and imprint given characteristics to the morbid manifestations accompanied by hallucinations. It is known, for instance, that epilepsy may be substituted by a spell of "psychic epilepsy," showing that a given pathogenic agent may act either on the psycho-motor or on the sensori-perceptive sphere. Emotion may act as a pathogenic agent by causing chemico-molecular changes and consequent production of pathogenic agents in the organism—particularly in the nervous system. A case of hallucinations, delusions of persecution and attempted suicide is cited and the findings at the autopsy are given. The brain presented marked lesions of the gray and white substances of the right lower parietal convolution—corresponding to the site of a trauma received during childhood (*Il Manicomio*, No. 1, 1905).

Objective Signs of Hallucinations.—DR. ZAREGRADSKI: The study is limited particularly to hallucinations of hearing. It is claimed by some that under those conditions the external part of the ear, and more particularly the tegument near the tragus becomes furrowed. Of 55 cases of auditory hallucinations, 14 did not present that sign, while 41 of the cases presented the peculiarity with different variations. In one case of unilateral hallucinations it was found that the furrows existed on the affected side while they were absent on the healthy side. In one case the furrows corresponded to animated mimic expressions of the face. Laughing or crying was accompanied by marked contractions of those furrows. The latter were particularly marked in cases in which hallucinations had been of some three years' duration and more. The subjects examined were between the ages of from 25 to 50 years. The furrows were particularly marked in subjects above 38 years of age. In some cases the furrows were more

marked on one side or absent on both sides. The presence of the furrows during the course of auditory hallucinations cannot be said to be without any significance (*Vestnik Doushevnich Boleznei*, No. 1, 1905).

Sexual Continence.—Can sexual continence be a cause of neuroses and psychoses? The personal qualities of the subject play an important part in this matter. Subjects in good physical and mental condition do not suffer any untoward symptoms from the practice of continence. Albrech von Heller tested on himself the effect of continence. At first he suffered from headaches and general malaise, but this was soon replaced by a condition of mental alertness and vigor. The author states that continence may be absolutely harmless when practiced by men of serious minds and wholesome mental occupations, leading regular lives and living on simple but good food. For women it is much easier to practice continence, but they should have some wholesome mental work to keep their minds busy. The degenerate and neurasthenic may find it harmful to practice continence, but sometimes they are also considerably harmed by marriage—that sometimes serves as an exciting cause of psychoses or neuroses (*Mental Diseases*, Prof. Kovalevski, pp. 232, 233, 1905).

Histo-Pathologic Researches Into Paramyoclonus Multiplex.—DR. E. POGGIO: cerebrum: slight atrophic alterations with moderate lipochromatosis in a discrete number of cells and uniformly distributed in the convolutions. Spinal cord: lipochromes in the majority of the radicular cells and in those of Clarke's column. The radicular columns presented, besides the lipochromes, marked lesions in their entire height, especially in the lumbar region. The lesions were of longer standing in these columns than in Clarke's column. The other spinal cells presented lesions similar to those described in the brain. There was no neuroglia proliferation in the entire cerebro-spinal axis. There were slight vascular alterations, but neither perivascular nor pericellular infiltration. The author does not present these as typical lesions of paramyoclonus multiplex, but simply states that such was the condition in his case (*Rivista di patologia nervosa e mentale*, April, 1905).

A Case of Traumatic General Paralysis.—DR. WAHL has had occasion to observe a case of general paralysis that was due to a traumatism received in the left parietal region of the head. The subject's history was negative, and, so far as was known, he had never had syphilis.

Discussing the case, Prof. Joffroy remarked that too much importance was ascribed to syphilis as a cause of general paralysis. The incrimination of syphilis as above was due to an erroneous scientific reasoning. An etiological connecting link is always necessary between syphilis and general paralysis. In Dr. Wahl's case the connecting link was the traumatism, without which general paralysis would not have manifested itself. From a medico-legal point of view, it is right to allow a pension to soldiers under circumstances described above. The patient described above was a soldier (*Annales Médico-Psychologiques*, No. 2, 1904).

General Considerations of the Clinical Significance of Dementia Precox.—DR. MEEUS: The hebephreniac and catatonic form of Kraepelin represent,—one a slight, and the other a graver form of the same disease. The author suggests that more definite terminology be used in regard to the forms of the disease in question. Thus, hebephreno-catatonic dementia unites in one title both the notion of the historic evolution of the disease, its special features and age of onset. Many other important considerations of the question are presented (*Annales Médico-Psychologiques*, No. 2, 1904).

The Element of Truth in Mental Healing.—DR. LUCY WAITE: there are many cases of what the author calls mental indigestion. Such patients are generally preoccupied with some thought or other that makes them feel unhappy, causing insomnia, headaches and dyspepsia, and even driving them insane—for want of proper treatment: the specialist does not see in them classic types of insane, while the general practitioner is at a loss to understand the true nature of the trouble. In a large number of such cases want of proper mental employment is the cause of the disturbance. Rest has been known to us as a therapeutic agent for many years, but work—as a therapeutic agent—has not been thought of, according to the author. Cases are cited in which work relieved mental suffering and consequent insomnia, indigestion and headaches (*New York Medical Journal*, August 19, 1905.)

Race Suicide in France.—According to M. Bertillon, the number of children born in France last year was only 818,229; this is the smallest number registered of late years. The number of children born this year is said to be 150,000 less than in 1871. During the last year the population of France was increased by only 57,000, while that of the United Kingdom had an increase of half a million, and Germany, 812,000. The population is rated

at 39,000,000 inhabitants. The quinquennial census of the German Empire, taken December 2, exceeds 61,000,000, against 56,345,000 in 1900. The birth rate in Germany is slowly receding, however. According to Dr. Ebers, it is not probable that the population will ever reach the mark of 70,000,000.

Sixth International Congress of Criminal Anthropology.—

The VIth International Congress of Criminal Anthropology will take place in Turin, Italy, April 28, 1906. The local committee consists of a number of distinguished men, headed by Professor C. Lombroso as President. Among the subjects to be treated are announced:

Treatment of young criminals according to the principles of criminal anthropology, by Prof. Van Hamel, Holland. Treatment of criminal women, by Dr. Pauline Tarnovskaja, St. Petersburg. Relation between economic conditions and criminality, by Dr. Kurella. Equivalence of different forms of sexual psychopathias and criminality, by C. Lombroso. Criminal anthropology in its relation to scientific police organization, by Ottolenghi. Psychologic value of testimony, by Brusa. Prophylaxis and therapeutics against crime, by Enrico Ferri. Institutions for perpetual detention of criminals declared mentally irresponsible, by Garofalo.

Subscription for membership is twenty lire. All communications and subscriptions should be addressed to the General Secretary, Prof. Mario Carrara, Institute of Legal Medicine, 26, Via Michelangelo, Turin, Italy.

Fifteenth International Congress of Medicine will be held in Lisbon, Portugal, April 19-26, 1906. All communications should be addressed to the Secretary, Hôpital de Rilhafolles, Lisbon.

A Veritable Social Peril. Voluntary Depopulation.—PROF. G. EUSTACHE: in 1850, the population in Germany and France, respectively was about the same—35,000,000. To-day, Germany has over 61,000,000, whereas France's population is only 39,000,000. The author claims that the reason of this rapid decrease in population in France is due to the large number of divorces, increasing in greater proportion than does that of marriages; excessive death rate among children, and voluntary decrease in population through prevented conceptions and criminal abortions. In 1904, the population for France was the lowest recorded in the XIXth century. The number of births in 1903 was 826,712,

whereas in 1904, the number was only 818,229. Statistics from one hospital in Paris, Boucicaut, taken at random, show that there is an alarming number of abortions in that city: thus, in 1898 there were 45 confinements before term as against 102 similar confinements in 1904. There were also 43 abortions recorded in that hospital in 1898, as against 130 abortions in 1904. According to the author, more energetic teaching of morality in the primary schools would remedy the evil (*Journal des Sc. Médicales de Lille*, Nov. 25, 1905).

Some Points in the Early Treatment of Mental and Nervous Cases (With Special Reference to the Poor).—

DR. A. HELEN BOYLE: this year, the Council of the Lewes Road Dispensary for Women and Children in Brighton has opened a small hospital, one of its principal features being that all nervous cases are eligible for admission except those requiring restraint and suitable for asylums. The author claims that more such hospitals are needed, as there are many patients who would escape becoming insane if they were properly treated before they break down so that they are technically insane. In other words, she says, insanity begins before a person is insane, and it is then that recognition and skilled treatment are most valuable. Clinics for such cases are in operation in Germany,—in Berlin, Munich and in many provincial places. In institutions for such cases there should be an entire absence of red tape, and the type of building that would probably suit best would be cottages. The cost should work out somewhere between that of asylums and general hospitals in England. At the Brighton Hospital, with twelve beds only, the cost will probably be about 15 shillings a week per capita—possibly less (*The Journal of Mental Science*, Oct., 1905).

Peculiarities of Memory in Progressive General Paralysis.—

DR. ZACHARCHENKO: the most striking impairment of memory is in the sphere of mechanical memory, such as memorizing senseless words or sentences. Memory based on association of ideas and active attention is much less impaired. From the standpoint of the component parts of memory these facts are of interest. In cases of Korsakoff's disease, the impairment of mechanical memory is far less marked than in general paralysis, whereas memory requiring association of ideas and attention is far more marked in Korsakoff's disease (*Voprossi Nervno-Psychicheskoi Medizini*, Vol. IX, 1904).

Mother Kills Her Seven Children and Mortally Wounds Herself.—According to the *New York World*, Oct. 1, 1905, Mrs. Lydia Markum, of Cambridge, Ill., killed her seven children, ranging from twelve years to an infant in arms, piled up their bodies on the floor, covered them with bedclothing saturated with oil, set fire to the house and mortally wounded herself. In a rural mail box a letter was found from Mrs. Markum to her husband, in which she wrote that she was going to kill the children and herself, saying: "I love you and the children, but there is no happiness on this earth, and they will be happier and safer in the arms of the Lord."

The family was poor, and the woman's struggle to rear her children, combined with loneliness and lack of recreation is supposed to have unbalanced her mind

Stereotyped Dreams.—DR. MEUNIER: in normal subjects dreams vary with the cenesthesia of the subject, whereas in some pathologic conditions dreams are stereotyped. This condition of stereotypia in dreams is particularly characteristic of epilepsy and hysteria and of some psychoses with fixed ideas of old standing. There are some cases, however, in which stereotypia in dreams is due to impressions of childhood days (*Journal de Psychologie Normale et Pathologique*, No. 5, 1905).

A Detail in the Russian Revolution.—In a small village on the Baltic Sea a manifesto was issued, the first week in December, abolishing the rule not only of the Emperor, but also of the Deity. It is reported that the manifesto has been read in the churches and the popular assembly halls.

Chinese Sympathy for the Jews.—December 3, a company of some forty Chinese, under the auspices of the Chinese Empire Reform Association, presented "King David" at Miner's Bowery Theatre for the benefit of the suffering Jews in Russia. Nearly \$1,000 was realized.

Dechloridization, Bromism and Status Epilepticus.—DRS. VOISIN AND RENDU: this method was used in the treatment of 15 epileptics, potassium bromide being given in doses of 4 grams. The number of attacks and vertigo was decreased (11 attacks against 272, and 12 spells of vertigo against 198), but there were signs of bromide poisoning (acne, titubation, somnolence) and mental disturbances (melancholic depression and hallucinations). In five cases there was status epilepticus and one patient died (*Progrès Médical*, Nov. 25, 1905).

A Hospital for Inebriates in New York will be organized in New York City this coming summer. According to the *Quarterly Journal of Inebriety*, No. 3, 1905, Legislature has passed a bill to provide for the establishment in this city of a hospital for confirmed drunkards and *habitués* who may be committed from the police courts and other courts of the city and State. The building and site will cost over \$300,000, and be paid out of the excise money. There are about 30,000 persons arrested for intoxication in New York during the year.

Antitoxin for Mushroom Poisoning: DR. W. W. FORD, of Johns Hopkins University, has obtained the toxin by boiling and filtering the poisonous species of mushrooms, and with this he immunized small animals, according to the method used in obtaining the diphtheria antitoxin, thus securing a protective serum. As yet the substance has not been tested on a human being (*American Medicine*, Dec. 9, 1905).

Absence of Glucose in the Cerebro-Spinal Fluid.—DR. DUBOS: the substances in the cerebro-spinal fluid that reduce Fehling's solution are not glucose. Reactions to demonstrate this are indicated in detail. The reducing substances are creatin, creatinin, xanthin and hypoxanthin—results of metabolic changes (*Annales Médico-Psychologiques*, No. 3, 1905).

Clinical Contribution to the Study of Ocular Paralysis.—Dr. GIOVANNI FABRIZI presents a valuable clinical study of ocular paralysis. Among other interesting facts, he reports two cases of congenital blepharoptosis and one of congenital bilateral paralysis of the external oculo-motor muscles (*Annali dell'Istituto psichiatrico di Roma*, Vol. III, fasc. I, 1904).

Laminectomy of the Third and Fourth Lumbar Vertebrae for a Lesion of the Cauda Equina.—PROF. ROBERTO ALESSANDRI: the wound was healed within seven days from the day of the operation, and satisfactory results were obtained (*Rivista di Patologia nervosa e mentale*, February, 1905.)

Warning to Physicians of Colorado.—In Colorado it is forbidden by the law to give a prescription for alcohol to anybody without making an examination of and without a fee from the patient. Violation of this law renders the physician liable to a fine of from \$100 to \$300 (*American Medicine*, Nov. 18, 1905).

Syndrome of Brown-Sequard. Wound of the Spinal Cord.

—DR. COUTEAUD: the patient sustained a more or less complete section of the right half of the spinal cord, in the region corresponding to the dorsal side of the brachial segment. The syndrome was fully manifested only after five days following the infliction of the wound (*Gazette des Hopitaux*, Nov. 21, 1905).

Multiple Births and Heredity.—Mrs. W. W. Wilson, of Los Angeles, gave birth to triplets for the second time, Nov., 1905. She is herself a twin and has two aunts who also have borne triplets.

BOOK REVIEWS.

Studi Sulla Pazzia Nella Provincia di Roma. Confronti Internazionali. DR. AUGUSTO GIANNELLI, *Senior Physician of the S. Maria della Pietà Hospital for the Insane, Rome, Privat-Dozent of Psychiatry and the Psychiatric Clinic, Rome.* Ludovico Cecchini, Rome, Publishers, 1905. The study embodied in this work is statistical and clinical, comprising 18,338 admissions, during a period of 74 years, in the XIXth century (1811-12 and 1829-1900); the data for the missing years of that century are either wanting or incomplete. Historic chapters precede the study properly speaking, presenting valuable information of social and historic significance on the founding and growth of the Hospital for the Insane at Rome, Italy. The Hospital was founded in 1548. Want of space prevents a detailed analysis of this work, and a simple enumeration of the headings of chapters with an analysis of some of the chapters will be presented here. Some of the headings are:

Historic considerations. The population of the hospital during the twenty years 1881-1900, with especial reference to some psychoses since 1870. Insanity in its relation to sex, age, civil state and education. Insanity among Jews. Insanity according to profession, month and season of the year. Mortality according to age. Insanity in relation to altitude. Distribution of insanity in the Province of Rome, with particular reference to general paralysis of the insane, alcoholic and pellagrous psychoses. Insanity in the Province of Rome in the XIXth century as compared with insanity in other provinces and in foreign countries.

During the twenty years 1881-1900, the largest number of admissions were those of general paralysis (1,368), alcoholic in-

sanity (1,337), maniacal psychoses (1171) and epileptic psychoses (1,033); then follow the melancholic forms (886) and the neurasthenic varieties (633). The author considers that there is a direct relation between syphilis and general paralysis of the insane, stating that deaths from syphilis and general paralysis respectively are of importance in the Province of Rome: half of its population is in the capital, in the hospitals and asylum of which the majority of the cases of syphilis and general paralysis respectively end in death.

Alcoholic insanity has decreased in Rome during the last ten years, and the continuous decrease of this form of insanity among women since the ten years 1871-1880, is quite the opposite of that seen in other capitals. In Paris the increase of alcoholic insanity is enormous, women furnishing almost as large a proportionate increase as men do. Alcoholism is the most common cause of epilepsy and idiocy.

During the twenty years 1881-1900, ten patients committed suicide: 5 men—0.08 per cent. of the 6,298 men admitted; and 5 women—0.13 per cent. of the 3,859 women admitted. These data are lower than those obtained for the period 1874-1880. During 1881-1900 there were three patients killed by homicidal patients. The total number of admissions during the same period was 10,361. Of this number 204 were discharged as not insane. The mean population during the same period was 1,045,481.

There has been a gradual and marked increase in the number of women general paralytics: in 1871-1880 the proportion of women to men general paralytics was 1:6.5; in 1881-1890 the proportion was 1:3.34 and in 1891-1900 it increased to 1:2.34. In other words, the number of men general paralytics has almost tripled, while that of women is seven times more marked than it was in the first indicated period.

The figures relating to sex and insanity should be read, otherwise the correct idea of this relation is apt to suffer when expressed in bare figures.

Subjects born outside of wedlock furnish a larger proportion of insane than does the general public. Besides, epilepsy and the senile psychoses are in larger proportion among these subjects, while there is no difference in the respective proportion of general paralysis.

Public instruction is not a cause of increase of insanity.

There is no special racial psycho-pathology, but certain political conditions, oppressing given races, have lead to an increased predisposition to insanity in given cases. Other causes, such as lack of racial mixture, go hand in hand with the former cause. The

Jews are especially predisposed to hysterical disturbances and neurasthenia, while epilepsy is rare among them. There are also given psychoses that are more frequent among them. Moral depravity is rare, while periodic insanity is of frequent occurrence. Few of Jewish children are idiots, but a large number of them are neurasthenic since early childhood. During the period of 1881-1900, there were, in the Province of Rome, 5.26 insane per 10,000 Jews against 3.72 per 10,000 Roman Catholic inhabitants in the same Province. Among the Jews there are also a larger number of men insane as compared with that of their women than there are among the Catholics. In the Province of Rome, the number of admissions of Jewish epileptics and alcoholists is smaller than that among the Catholics. Among the Jews the percentages are more marked in the same Province for the following psychoses: maniacal conditions, hysteria and general paralysis. Nations of the blond and light complexions are more predisposed to melancholia than are those of dark complexion.

In the Province of Rome the maximum admissions take place in March-June; there is a decrease, beginning with July, that reaches a minimum in September—when it is still quite warm in Rome. This minimum is smaller than that reached in January. September gives the absolute minimum of admissions. The paroxysm of insanity is precipitated in the Spring. The largest number of insanity is controlled by actinometric rather than by thermic maxima.

Extreme altitudes and flatlands are also important factors in relation to the condition of the human mind. The water supply, geologic and climatic conditions, however, have much to do with the above altitudes in their relation to the progress of mentality.

An analysis by counties (communes) in the Province of Rome shows that some did not furnish any insane, while others furnished insane of one sex only. The author did not find any direct relation between alcoholism and general paralysis.

The change from the papal to the temporal government did not cause any increase in insanity: public instruction helped the people to understand that insanity should be treated, and a larger number of admissions resulted. Great political upheavals do not cause any increase in insanity. The admissions during the revolutionary periods in France and in Italy respectively do not show any increase during those troublous times. To-day, the increase of insanity in Italy is due to the extreme stress of life.

The analysis of the asylum population during the second half of the XIXth century shows that the increased number of admissions is due to a better understanding by the people of the mean-

ing of insanity as well as to the better treatment accorded to the insane. There is a slight increase of insanity in the suburbs of Rome. This is due to extreme economic misery and emigration. In Rome properly speaking there is rather a slight decrease of insanity than an increase. Civilization is not a cause of insanity.

The vast material collected in this large volume of 497 pages, illustrated with 23 tables and charts, is handled not in the simple manner of simple representation: the author, who is well known to the psychiatric world for his accomplishments in neurology and psychiatry, has proven himself in this work to be an able correlator of facts as well. By his power of correlation he has succeeded in presenting to the world a scientific history, pointing out the particular social, political, religious and ethnographic significance of facts that have hitherto conveyed little, if any, meaning to the reader. The volume is a valuable reference book on the subject of statistical data about the insane from the standpoint of applied knowledge.

Le Syndrome de la Névrose Ascendante (Névrite Ascendante Régionale). Clinique et Experimentation.—DR. J. A. SICARD. Francis Simon, Rennes, 1905. Clinical conclusions: the term ascending neuritis should be applied to a regional syndrome following a local toxi-infection, the syndrome being slow, progressive and ascending from the periphery to the central nervous system, with a possibility, however, of regression and cure. In the affected region the pain is acute and of paroxysmal nature. The etiology is always a severe or slight localized toxi-infection, most commonly of traumatic nature; the microbe is generally a common one.

The pains are ascending and irradiating, the nervous trunks hypertrophied, easily felt by palpation. Radiographic study shows rarification of the bone in the region corresponding to the affected area. This rarification is one of the earliest and most important signs in the affected area. Among the later and secondary signs are: objective disturbances of sensibility peripherally, disturbances of motility, reflexes, trophism and electric reaction.

Anatomically: interstitial reaction of the nervous branches and trunks, with augmentation of volume and secondary degeneration of the axis cylinder and myelin. This neuritis is, therefore, primarily interstitial and secondarily degenerative.

Topographically, there is a disto-central ascending neuritis, as in the case of wounds of the fingers, etc., and proximo-central, as in the case of infection of the trigeminus from a dental abscess.

According to anatomical research, ascending neuritis never

reaches the central nervous system by direct continuity. It is possible, nevertheless, to obtain central reaction through irritation *à distance*.

Experimental conclusions: the clinical facts related above are confirmed experimentally. Microbe infection may cause extension of the ascending neuritis to the central nervous system, but the infection in such a case is no longer confined to the nerve alone, but is generalized and rapidly causes death. In all the experiments in which septic poison had been carefully injected into the nerve properly speaking, the neuritis that followed was simple regional, without ever reaching the spinal parenchyma—not even in the experiments covering a period of from six to seven months. These facts show that the rôle of the nerves in regard to microbes is that of preventing microbic propagation in the direction of the central nervous system.

Contributo Allo Studio Clinico Dell' Emicrania (Semplice e Accompagnata). With a Preface by Professor G. Mingazzini. BY DR. MARIO AUGUSTO BIOGLIO. Tip. Operaia Romana Cooperativa, Rome, 1905. This monograph of 206 pages is divided into two parts, one treating of hemicrania from a clinical point of view, and the other being taken up with clinical histories of sixteen cases. The first few chapters are devoted to the consideration of the definition, etiology, pathogenesis and anatomical pathology, differential diagnosis, prognosis and treatment of hemicrania. The remainder of the first part of the work is taken up with the consideration of the relation of hemicrania to epilepsy and hysteria. These affections are considered in relation to one another from the neurologic, psychiatric, oniric and anthropologic points of view. There is also a study of the pulse and temperature during the course of the different neuroses mentioned. In the concluding remarks the author devotes about three and one-half pages for the enumeration of the conditions of dissimilarity between epileptic and hemicranic subjects respectively. The dissimilarity is considered from the following points of view: anthropologic, neurologic, clinical, hereditary and psychic. It is finally concluded that not all persons subject to hemicrania are either epileptic or hysterical, but the three neuroses belong under one heading of degeneracies. Prof. Mingazzini's classification of hemicranias is accepted by the author. A tabulated bibliographical index of ten pages in small type is appended to this monograph.

A CRETIN DOG AND ITS THYROID APPARATUS.

(From the anatomo-pathologic laboratory of the Psychiatric Clinic, Royal University, Prof. Tamburini's Service, Rome, Italy.)

BY DRS. UGO CERLETTI AND GAETANO PERUSINI.

The ancients were familiar with the fact that the mammalia were subject to goître in a manner similar to that observed in man. Aristoteles, Columella, Plinius, Gallius and Aetius speak of enlargement of the "glands" of the neck in animals. On close examination their remarks seem to refer to the thyroid gland. Goître was observed by the ancients in various species of mammalia in endemic regions. Among those mentioned are cats, dogs, oxen, horses, camels, mules, goats, antelopes (Amour, Siberia), etc.

In our first paper on endemic cretinism (5) we particularly pointed out the important rôle played by hypothyroid heredity especially on the mother's side; we considered endemic cretinism as a heightened morbid heredity characterized by hypothyroidism. We presented this notion provisionally—pending the discovery of the exact pathogenic agent of goître in its various forms. While making our researches into endemic goître in man it occurred to us that it would be of interest to consider the same disease in animals living in endemic regions, particularly so because it is known that animals living in such regions are not all free from the affection.

Several observers have treated of endemic goître in animals, but the handling of the subject is incomplete. Raynard (27), for instance, touching on the question of goître in dogs, speaks of animals with "large heads, short necks, underdeveloped bodies and limbs, comparatively stupid from various points of view, idiots, and born with this disease." Billiet and Morel (3) speak of dogs "characterized by voluminous heads and necks, crooked limbs, slow movements and lack of precision. They are not at-

tached to their masters and their animal function alone seems to be in order. They are a kind of idiots, sheer cretins that are destroyed on account of their homeliness and uselessness." St. Lager (29) also observed that the "fur of animals subject to goitre was coarse and stiff, their voices hoarse and their hearing impaired. Such animals were indolent and some of them fell into a condition of torpor that one could not help comparing to that characterizing cretinism." Finally, Moussu (26) gives a description of cretin chickens that presented "trophic disturbances characterized by overgrowth of plumage" similar to the overgrowth of bristle in thyroidectomized pigs.

We have not found any other description of endemic goitre in animals. We were very much pleased, therefore, when Professor Grassi gave us a small Valtellina dog that presented several characteristics of cretinism. The study of this dog forms the subject of our paper.

We present here a study of cretinism in the dog, including a research into the anatomo-pathology of the affection. As the present knowledge is incomplete, all additional research into the anatomo-pathology of endemic cretinism is most valuable, particularly because up to the present the published autopsies of such cases are altogether incomplete. In this paper we present an abbreviated clinical history of the dog and particularly the anatomo-pathology of its thyroid gland.

The dog is a small male subject, born in Berbenno (Valtellina), mongrel. In the Alps the variety of dogs to which ours belongs are generally smaller than elsewhere. Our dog was about six months old when we examined it. Its father and mother are afflicted with goitre. The peasant who has taken care of the animal since its birth tells us that it is one of three born the same day; one of these died immediately after birth, one seemed to have been normal, except that it was of small size, homely appearance and weak physically; our dog was also of smaller size than usual at birth, homely in appearance and weak physically; it did not bark and could not nurse; it was nursed artificially with bread and milk during a period of three months. It is difficult to give a detailed description of the dog's condition during those three months. When about three months old the animal was handed over to Professor Grassi's collaborator, Dr. Munaron. According to his statement, the dog was then in a condition of physiologic misery, its goitre was marked, the animal could not walk and its somatic development was about half the normal. The bad conditions in which the animal had been brought up may also have had something to do with its miserable state. The animal weighed 950 grams. In this condition it was transported to Rome, where it began to take nourishment itself, although still showing little appetite for food and eating only chosen morsels. Nevertheless physical improvement took place within a short time. The animal became more animated, ate more readily of its own accord and grew considerably bigger in size; a few

months later it began to walk, but still preferred to remain in its corner. When handed over to us it weighed 1,080 grams; its length from forehead to end of tail was 31 centimeters. Its fur was in black and white patches, irregularly distributed; it was long and curly on the head, long and thick on the cheeks. The ears were long and pointed, but flabby and hung down. The fur on the ears was quite thick. On the trunk of the body the fur was rather short, fine and thin; here and there were tufts of fine but thin fur. On the limbs the fur was unusually long, especially on the paws and between the toes, where it reached from 2 to 3 centimeters in length. There was also a long tuft of fur at the penis; the latter was oval shaped, as is usual in small dogs. The head seemed large in proportion to the body; the forehead was noticeably protruding, as in Japanese dogs; the nose was short, flat and flabby, the eyes wide apart so that the external corners of the orbits extended beyond the temples on both sides. The teeth were small, irregular but white. At the neck, anteriorly, two tumefactions were readily felt by palpation, each being the size of a small hen's egg; each mass was movable, hard, but elastic to the touch. The entire lumbo-sacral part of the spinal column was curved, the concavity turned ventrally. The tail always hung down and was curved between the posterior limbs. The left anterior limb was held in a normal position while the joint of the right one, corresponding to the elbow joint, was turned outward, so that the sole of the paw was turned outward. All the limbs presented permanent contractures; it was impossible to extend them by passive movements, although the paws could be flexed on the shin bones; active movements were limited to movements of the limbs *in toto*. The thighs of the posterior limbs were spread apart, the joints corresponding to the knees turned outward and the legs turned inward, so that when the animal was at rest one or both legs were turned under its abdomen. Both these limbs presented marked resistance to passive movements. The dog always sought to lie down. When made to stand up the following conditions prevailed: the joints corresponding to the knees of the posterior limbs as well as the paws were turned outward, the legs presented spastic contractures with continuous tremors. We had great difficulty in making the animal walk. In walking it used mostly the left anterior and right posterior limbs; the other two limbs remained stiff and were used only to maintain the equilibrium of the body. In its usual attempts to walk the animal held its posterior limbs crossed under itself, but now and then these limbs were straightened. The right anterior limb was always turned inward, toward the middle line of the body, and always remained in a condition of contraction. The left anterior limb was in a fairly good condition and used mostly in gait. When walking the animal's tail turned irregularly in all directions. When forced to walk the dog took a few steps, always in the direction of some corner in the room, and lay down. During such an exertion the dog growled continually in a peculiar plaintive manner. Our animal also presented divergent strabismus, the right eyelid opened wider on the temporal than on the nasal side, and the pupils reacted to light but very slowly; the knee reflexes were exaggerated; sensibility to pain seemed to be intact in the entire body. The dog always remained quiet in its corner and never barked. When anybody came near, it lifted up its head, pricked up its ears and looked with its eyes wide open, while its nostrils vibrated rapidly. Its hearing seemed to be intact because sounds and noises always seemed to arouse it from its torpor. In its choice of food it always

showed preference for milk and dainty morsels. It always urinated under itself and without standing up. When handled somewhat roughly it howled most piteously. It was difficult to ascertain whether or not it recognized the different people who were in a habit of seeing it daily.

AUTOPSY.—The animal was killed by bleeding. In front of the trachea and below it as well as at the level of the cricoid cartilage was a large oval-shaped body about the size of a pigeon's egg; the body was directed obliquely to the left and about five centimetres downward. The trachea was flattened antero-posteriorly. The mass was easily detached by cutting a few loose connective tissue bands that held it in place. It was rich in blood vessels. The veins were of large calibre and the arteries, also of large size, entered the thyroid body in its upper part. On the right of the trachea was another thyroid body but of smaller size than that on the left side. The trachea was tilted toward the left side. Inferiorly the gland was exactly between the trachea and the carotid artery. The first thyroid body weighed 5.93 grams and the second—5.48 grams. The parathyroid bodies were normal in appearance.

Both frontal bumps were considerably developed. The meninges, pituitary body and spinal cord seemed to be normal. The heart, large vessels, lungs and upper part of the gastro-intestinal tract seemed to be normal. The walls of the small intestine were quite thick, the peritoneum transparent and there was a large amount of fat in the omentum, the fat running along the course of the blood vessels. The spleen was thin and lobulated and the liver seemed to be normal. The gall bladder was very large, adherent by its walls to the liver and filled with fluid of a deep blue color. Both kidneys were smooth, of equal size and the capsules were not adherent. The medullary substance was anemic (cause—mode of death). The walls of the bladder were very thick. The testicles were normal.

MICROSCOPIC EXAMINATION OF THE THYROID GLANDS.—Fixatives used: alcohol—96 per cent. and 10% solution of formol. Sections made by freezing process. Inclusion—with colloidin—and paraffin. Control sections made on four normal dogs of about the same size as our cretin dog. There was no essential difference of structure between the right and left thyroid glands examined.

The fibro-elastic envelope of the gland was quite rich in elastic fibres (Weigert's method) and sprang from the envelope itself. The connective tissue envelope was thickened *in toto* and besides presented numerous thickened bands; in some places could be seen the fibrillary tissue of the proliferated connective tissue (Weigert's method for the mitoses and hematoxylin of Heidenhain).

Tissues of two different natures are found in section of the gland taken along both its large and small axis; these tissues are particularly noticeable in the middle part of the gland. Here and there are seen very large follicles intermixed with small ones. The interstitial connective tissue is not very much developed unless it be in the principal tufts (Fig. 4). Near the tufts there are patches here and there (more numerous at the periphery), in which the medium size of the follicles is small and the interstitial connective tissue is quite developed in all the tufts (Fig. 1). This unusually thick network of connective tissue circumscribes lobules that contain from 10 to 20 small follicles.

The thicker tufts of connective tissue do not show any clear fibrillary structure but are made up of homogeneous bundles that do not take any stain and seldom have any nucleus. These characteristics would indicate that the connective tissue has undergone hyaline degeneration (Van Gieson's stain).

The gland presents some normal tissue, but its greater part is formed by the two kinds of tissue mentioned above.

Under a higher power one sometimes finds, especially in the follicles surrounded by the thick network of proliferated connective tissue, regressive alterations of the epithelial cells. The contour of the cellular bodies is not clear and some of the nuclei seem to be outside of the cells, or without any cells. In some places the epithelial layers themselves are most irregular. The epithelial degeneration is also expressed by an abnormal size of the nuclei that measure sometimes from 8 to 10 times the normal. Their form is roughly round, their protoplasm pale and of ill defined contour. Their weak affinity with hematoxylin prevents the study of the distribution of the chromatin.

Among groups of more or less normal cells there are follicles with pale and shrivelled cells that have smaller nuclei than normal, highly colored and irregular (Fig. 2). Sometimes these elements are grouped so that their surface resembles that formed by a tangential cut of an epithelial layer.

Within the follicles that present the above mentioned alterations there can sometimes be found groups of polynuclear leucocytes. In this rather rare case the follicles may be found almost totally devoid of their epithelial lining, so that at times it is difficult to determine whether it is a follicle or a lymphatic fissure more or less filled with colloid substance or one resembling it; finally it may be taken for a vein clogged with coagulated plasma (Fig. 3).

The majority of the follicles of the gland are clogged with colloid matter. Some parts of the gland are free from this sub-

stance, but it is impossible to ascertain the relation between this condition, the size of the follicles and the degree of the epithelial degeneration. On the other hand, the fixatives may considerably alter the appearance of the colloid substance.

In sections of the gland treated with formol retraction of the colloid substance in the epithelial walls is almost exceptional; this is common, or even marked, in sections of pieces treated with alcohol, showing plainly the characteristic processes and concavities on the free borders. In this case the colloid substance is generally detached on one side only of the follicle. This detached colloid is less susceptible to the stain than is that adhering to the epithelium. Besides, under artificial light the detached side of the colloid substance has a granular aspect while that on the other side is more homogeneous, compact and more readily stained. These traits are constant in all our sections treated with alcohol; in the colloid substance of various follicles and even in that of the same follicle we found: 1, homogeneity of the colloid adhering to the epithelium with normal or exaggerated susceptibility to stain; 2, granular colloid substance, retraction of the colloid from the epithelium, bad stain or even absence of it.

Generally the sections treated with formol, as well as those treated with alcohol, present a great variety of degrees of reaction to staining reagents, beginning with the follicle, the colloid of which remains absolutely colorless, to the follicles the colloid of which is highly stained. With Heidenhain's hematoxylin the colloid of the majority of the follicles is stained a dirty gray yellow; but the colloid substance of other follicles, especially that on the periphery of the gland, is stained a dark steel gray and at times black. Excluding all possibility of insufficient differentiation, about the same results are obtained, with Weigert's method, for the metoses and elastic fibres. Here we found an extraordinary resistance of the colloid of certain follicles to decoloration even after 20 hours' treatment with acidulated alcohol. When a double stain is used the diffuse stain, such as eosin, is preferable for the colloid substance; in these sections the colloid can be found with all degrees of the stain, from a pale pink to a dark red. This stain is to be found, however, in two different chromatic varieties: one in various degrees of pink or red, the other—in violet; in either case there is a trace of blue (hematoxylin). Vassale's and Brazzà's method (35 bis) give the same results with the colloid substance, although the orange yellow stain is diffuse and the different hues not well marked because of the alcohol used as a fixative instead of the direct stain with the reagent. With van Gieson's method the follicles are colored yellow (picric acid), or

orange yellow with other stains and finally red (fuchsin). About a similar irregularity of reaction is obtained with van Gieson's method modified by Weigert (36).

There is a relative absence of blood vessels in the gland. The large arteries and veins are filled with blood, while the smaller vessels and capillaries are empty. We do not wish to affirm that we have seen within these vessels any substance similar to the colloid. In the very large fissure shaped lacunas and in the connective tissue tufts of the gland we found quite frequently a substance resembling the colloid of the follicles as well as polynuclear leukocytes.

The stain with Sudan III. and Flemming's fixative authorizes us to exclude the supposition of the presence of fatty or similar substances.

In the lumen of an artery of large calibre (corresponding to the middle thyroid artery of man) we found eminences corresponding to Schmidt's *Arterienknospen* (35). The artery was one with predominance of elastic tissue in its tunica media. Within the lumen there were two eminences, each facing the other, and that could be seen with a low power (Fig. 5). The external eminence was the smaller, formed by the intima and distinctly divided from the tunica media by the internal elastic tunica. The intima shows a gradual thickening, forming a nipple shaped eminence with a large basis. The endothelium apparently participates in the proliferation of the connective tissue. Within the thickness of the eminence there are a number of star shaped cells, very little fibrillary substance, round cells and polynuclear leukocytes, especially on the surface. Upon the internal elastic membrane, within the thickness of the eminence, there is a rich mass of proliferation connective tissue very poor in nuclei. In a word, the eminence is formed partly by multicellular infiltration and partly by fibrillary substance. We found these characteristics in all the series of our sections.

The other eminence within the lumen is large, appears as a pediculated mass, the peduncle being rather slender. All the layers of the vessel are compressed in this button shaped eminence. The depression of the external vascular wall, corresponding to the peduncle, carries with it the perivascular tissue, and on a transverse section of the adventitia of the border of this depression are found small vessels, nerves and probably also veins. The layer of elastic tissue is not interrupted at the acute angle of the peduncle of the eminence, but continues although it is quite thin; and according to the type of the blood vessel, its tunica media is rich in elastic fibres; but the great abundance of this tissue sug-

gests the question of its possible neoformation. At the head of the eminence the endothelial layer is doubled and forms a crescent shape, while in the rest of this mass the thickening is formed at the expense of the adventitia and partly at that of the tunica media, the intima showing no alterations. This crescent appears to be formed mostly by the intima and also by the tunica media.

The deepest part (stained bright red with van Gieson-Weigert's method) is very poor in nuclei and shows no evidence of any fibrillary structure; it appears like the hyaline degeneration of connective tissue.

Within the vessel were still other eminences of smaller size but of the type similar to that described. All of them may be considered in three groups: 1, small eminences with wide bases formed by the intima only; 2, larger button shaped eminences, almost pediculated, formed almost exclusively by vascular tissue including the adventitia; 3, small eminences growing from the second variety formed by the intima and tunica media.

The alterations of this thyroid gland may be brought under several headings. The rare morphologic modifications of the epithelial layer of the follicles are rather of regressive nature. Above all we should exclude here the question of parenchymatous hypertrophy. While small follicles are found in groups here and there in the different parts of the gland, we do not attach any importance to their size in the sense of its being indicative of proliferation: up to the present the size of the follicles in the thyroid gland has not been sufficiently studied to allow of any conclusions on this score. Small follicles are quite numerous even in normal thyroid glands of dogs, and, besides, reduction in size of the follicles may also be an artifact caused by the reagents used. Guerrieri (15) draws attention to the fact that when alcohol is used as a fixative of the thyroid substance the hardening is excessive. Lübke (25) also drew attention to similar artifacts caused by the fixatives used, the "Colloidzellen" of Langendorff (23) and of other authors are also some of the artifacts in question. De Quervain (8) has made some interesting experiments in this line with various fixatives. Unfortunately it is difficult to obtain sufficiently thin sections with the freezing process without using formol as a preliminary fixative. Nevertheless we notice that the artifacts are infinitely less frequent when a 4% solution of formol (formalin 10%) is used instead of a 90% or even 70% solution of alcohol. Schmaus (32), Schmaus and Albrecht (33) and Schmaus and Böhm (34) have shown that after passing through the hardening process normal liver tissue

presented two layers of different aspects: one peripheral and the other central; these were caused by the unequal action of the fixatives. A similar condition is observed in the thyroid gland: the peripheral follicles are smaller while the central ones are larger and more regular. This is more marked when alcohol is used as a fixative than when formol is employed. This fact made us discard M-elle Geztowa's (13) method of using alcohol as a fixative, with the exception of three instances mentioned in the appendix. The non-use of alcohol was also convenient in regard to the study of the fatty matter of the gland.

Besides the small sized and irregular follicles due to artifacts in our case there were some that could be considered as the result of a pathologic process—hyperplasia. The diagnosis of parenchymatous hyperplasia (Wirchow) of the follicles of the gland is based on this characteristic.

Even in the normal thyroid gland of dogs one can find in sections over 20 mm. thick follicles apparently filled with cells. This is caused by the direction of the plane of section; we could verify this fact by appropriate serial sections.

In our case we can exclude, therefore, the question of epithelial proliferation. The majority of the follicles, both large and small, are lined with cubic epithelial cells of normal aspect. There are follicles of medium size, however, that are lined with flat cells, but they are not filled with colloid substance. De Quervain's indications (1, flat celled follicle—filled with colloid; 2, cubic celled follicle—medium quantity of colloid; 3, cylindrical celled follicles—absence of colloid) were not always verified in our case. In some follicles with flat cells, oval, reniform and irregular nucleus, the colloid substance was considerably reduced; in other instances the follicle was almost wholly deprived of epithelium or nearly so, so that it was difficult to know whether it was a follicle, a lymphatic fissure or a vein. It is probable that this appearance expresses an extreme degree of atrophic epithelial degeneration of the follicle. In such instances the cubic epithelium has an irregular highly stained nucleus (Figs. 2, 3). In some sections of this kind we found among these elements polynuclear leukocytes (Fig. 3), and for this reason have asked whether the cubic or round cells as well as the leukocytes were not elements of an exudation. It also occurred to us that these elements might be epithelial cells in process of absorption and that had been impaired during a process of atrophic epithelial degeneration. Properly speaking the high stain with hematoxylin does not speak in favor of a degenerative process, but the marked irregularity of the nucleus leads us to this supposition. Besides

the regular distribution of these cells and their resemblance to the normal epithelial elements leads us to suppose that they were undergoing degeneration. The description of these elements by various authors also lacks certainty. Thus, Horsley (19) describes nuclear elements together with leukocytes that may be found in the veins; Schmidt finds them identical with epithelial cells, but is not certain whether they are ante- or post-mortem formations; and Mlle Geztowa asks whether these elements are not swollen cells of the vascular endothelium.

It cannot be denied that the epithelial elements here are presented in various phases of a true degenerative process, both within the follicular cavity and the connective tissue. The uniform stain of the protoplasm with eosin speaks in favor of this.

Of the atrophic phases found in the gland or its connective tissue the most salient degenerative characteristic is the large follicle filled with colloid substance, that presents in most instances two or more follicles in one by reason of the breaking down of their walls (Fig. 4). There can be no question of artifacts in this connection.

The interpretation of the various aspects of the colloid substance is rather difficult. Commenting on the normal colloid, so far as it was known in literature up to 1901, Eiselsberg (12) makes general conclusions on the mode of refraction and other specific physical properties of the substance, but these have no direct practical significance. Lübke finds that all fixatives produce a constant alteration of the colloid and make it difficult to determine microscopically whether it is solid or more or less fluid matter. De Quervain has tried to determine the reactions of the colloid to different stains. Anderson (2) has grouped the colloid as chromophile and chromophobe. De Quervain does not accept the simple distinction of the colloid according to its reaction or non-reaction to stains, but advises to seek a finer differentiation according to the quality of reaction. Accordingly he distinguishes: 1, colloid substance reacting slightly to stains, of granular and thready aspect that should be considered as fluid; 2, homogeneous colloid readily taking the eosin and picric acid stain; this variety is normal colloid; 3, colloid readily taking the hematoxylin stain, and with van Gieson's the fuchsin stain; this is solid and very concentrated colloid*

In our own researches we find that colloid of granular aspect, not only in different but even in the same follicles, takes the stain less readily; and as this variety of colloid is always found detached from the epithelial wall, as against the homogeneous

* De Coulon (7) thinks that this intense blue stain indicates a mucilaginous transformation of the colloid substance.

colloid, the fact seems to favor De Quervain's opinion that the granular colloid is fluid. We point this out as simple physical characteristics, but do not agree with De Quervain that they always express chemical differentiation. We cannot agree with De Quervain's opinion just cited because the special predilection for stain varies with the reagent used. Thus, predilection of the colloid substance for hematoxylin was much more marked in specimens treated with alcohol than in those treated with formol. For this reason we cannot admit that variation of reaction should be taken always as an index of chemical differentiation of the colloid in the follicles.

It may be useful to remark that the colloid of normal thyroid tissue treated with alcohol is almost uniformly stained pink red with eosin, while this was not the case in the gland here examined. Sections without any chromatic affinity were exceptional in this research. This leads us to suppose that the colloid in our case differed from that of the normal thyroid.

We agree with Hänig (16), Ehrich (11) and Lübke that the substance resembling colloid, found in the vessels and lymphatic fissures, is most probably lymphatic plasma. We admit, according to the present anatomic and physiologic knowledge, that probably the latter contains some colloid substance in solution. Further reason why this substance is nearer lymphatic plasma than follicular colloid seems to us to be the fact that we always found in its masses migratory elements (leukocytes), whereas this was an exception in the follicles, and especially in those undergoing marked regressive epithelial and colloid alterations. We also found in the veins and even in the arteries a substance resembling colloid. In such instances we often found associated with it some leukocytes. One need only examine other tissue than the thyroid to become convinced that this substance in the veins and arteries is nothing but plasma of coagulated blood. We do not know on what ground M-elle Zielinska (38) supposes that this substance is colloid.

We wish to say a few words on the blood vessels of the thyroid gland here examined. The button shaped eminences in the arteries of the thyroid (goître) were described for the first time by Horne (18), then by Schmidt in the normal gland. The results obtained by the latter author are particularly interesting because his researches were made both on cats and dogs. The principal points of interest are: the localization of these eminences at the point of bifurcation of the vessel and their accumulation in a large number in the same vessel. Schmidt points out two

varieties of these eminences: one formed by the endothelium and the other—both by the endothelium and the tunica media, the button shaped eminences sending offshoots into the adventitia. Some of these growths are covered by flat cells. Schmidt thinks the latter are endothelial cells raised up by sub-endothelial proliferation, derived, perhaps, from the internal muscular fibres. He supposes in the end, however, that these growths may be formed by the endothelium only, the superficial cells of which are altered by the changed blood pressure. Geztowa does not accept this opinion, ascribing the eminences to the changed blood pressure. The conclusion that the growth is always of endothelial origin is based on the results obtained with Weigert's stain for elastic fibres. Geztowa says that if the endothelial growth were formed by proliferation of the muscular fibres of the tunica media it would raise also the tunica elastica, whereas she has always found the elastic tissue at the base of the eminence intact both in its structure and direction of its fibres. Besides, she adds, the tunica media is often irregular in thickness and sometimes absent even in normal arteries in their entire circumference, so that the intima and adventitia touch each other.

We think that Geztowa's arguments based on the stain of the elastic fibres do not settle the question, as she herself finds eminences containing elastic fibres of irregular direction; but in order to eliminate Schmidt's interpretation she claims to have found the tunica media under the eminence intact and limits herself to the discussion of neoformation of the tunica elastica akin to that found in arterio-sclerosis. According to de Coulon, obliteration of the lumen of the large vessels is caused originally by unilateral thickening of the vascular wall, by a sort of polypiform growths, that may reach out to the opposite wall of the vessel. Geztowa accepts this view, basing her opinion on her study of the connective tissue envelopes of the gland. She claims to have followed out the process of total occlusion of the lumen from the stage of simple intravascular button shaped eminence to that of total occlusion and even total hyalin degeneration, reaffirming the unilateral formation of the eminence, said to grow gradually until it reaches the opposite side of the vascular wall until it joins it.

Geztowa gives the following differentiation between the eminences in the large and small vessels respectively:

- I. In the large vessels they are not localized at the point of bifurcation, as is the case in the small ones.
2. Complete obliteration of the lumen takes place in the large vessels but not in the small ones.
3. In the large vessels the tunica media always remains intact.

This is due to the difference of blood pressure in the large and small vessels respectively,—persisting in the small ones, but becoming completely obliterated in the large ones.

4. Finally, these growths in the large vessels have a tendency to hyalin degeneration.

We have quoted at length because the points brought out have a bearing on our case. We wish to consider one more detail. De Coulon speaks of thickening of the intima of the large vessels. Schmidt and Geztowa do not seem to differentiate between the intima and endothelial lining. Schmidt says that according to Horne the eminences spring from the endothelial lining, and Geztowa thinks they spring from the intima. We think that an anatomical error is the cause of the controversy we have related.

The eminences, it should be remembered, are found in the arteries only. If we should take the arteries of the extremities as a type of large arteries, the thyroid arteries are only of small size in comparison. According to our present knowledge of the structure of arterial walls, the endothelial lining and the tunica elastica are separated by a layer of connective tissue. Hence, a morbid process localized at the intima involves not only the endothelial lining but also the layer of connective tissue. We think, for this reason, that the stellate cells, intermixed with the fibrillary substance of new formation that we found in the eminences, are essentially of connective tissue origin. And as the thyroid arteries are classed as being of small size, it is essential to determine where the connective tissue layer ceases to accompany the endothelial layer. Dürck (9, 10) speaks of an intima represented only by the endothelial lining in the precapillary arteries, but we consider it arbitrary to deny the presence of a connective tissue layer in the arteries in general; Geztowa does not consider this point at all in the plates of her work. It seems to us that she falls into an anatomic error when she speaks indifferently of the endothelial lining and the intima, and considers, with de Coulon, the intima in large vessels and the endothelial lining only in the small ones. We ask, then, on what ground does she deny the existence of the connective tissue layer in the small vessels and why does she not point out the difference between the pathologic processes that should take place in the endothelial lining in one case and in the intima in the other?

The intra-arterial eminences we have observed were all within arteries of medium size. But the large eminences do not seem to us to correspond to those described by de Coulon, for the adventitia always formed part of the growths. We neither affirm nor

deny that the small nipple shaped eminences represented preliminary stages of development of the larger ones. The intima is involved, and there is no basis for differentiating it from the process of common endarteritis. We prefer, with Amaldi (1), to speak with reserve on the question, as it is generally admitted that on the one hand the thyroid lesions are of endarteritic nature, and on the other Amaldi has so often found endarteritic lesions in the thyroid; under these conditions we consider it prudent to defer our definite conclusions. We call attention to the fact, however, that one should not mistake for a pathologic growth the folds of a shrunken artery or the misleading aspect of the surface of an oblique section of an artery made at the point of its bifurcation.*

A few words more about the anatomo-pathologic process of the growths here considered. According to Schmaus (31), the term parenchymatous goitre should be applied to the enlarged gland with dilated follicles that are increased in number; and colloid goitre—when the enlargement is caused principally by hyperproduction of the colloid substance that causes dilatation of the follicles. This variety may end, through an atrophic process, in cystic goitre. Kauffmann (20) speaks of fibrous goitre caused by proliferation of fibrous tissue. According to Ribbert (28) this is a common process. In our case the diagnosis of colloid goitre seems to be proper, regardless of the fact that we found here and there signs of regressive follicular atrophy and marked thickening of the connective tissue tufts.

We recognize that our diagnosis does not explain the anatomo-pathologic process. For, in the thyroid gland, as elsewhere, a hypertrophic process may include at the same time an atrophic one (30). Bircher (4) clearly treats of this question when explaining the onset of an interstitial inflammation of the thyroid subsequent to a parenchymatous one.

This transition from one process to another explains Geztowa's statements: from the study of thyroid glands she has examined (5 cretins, 5 congenital idiots and 1 microcephalic subject) she finds that the 4 atrophic glands of the cretins and the 2 of the

*After having demonstrated that these growths were not artifacts Schmidt declared that they had nothing in common with arteriosclerosis because they were found in normal glands, in those of the new-born, and in those subject to arteriosclerosis their number was not higher than in other cases. He thinks that these formations probably take place before or after birth without attracting attention in any way. Their formation has nothing to do with the thyroid function or the formation of colloid substance. Geztowa accepts this view on the ground of her study of thyroid glands with impaired or abolished function. We wish to remark, however, that it would be interesting to know how many of these growths existed before the onset of the atrophic process.

idiots presented marked resemblances with the only atrophic gland of the series (3-d idiotic subject).

Bircher asks whether all the anatomic tables of goître do not express the same morbid process. We push the question further and ask whether those tables do not express different stages of the same pathologic process, and what is the succession of these stages in endemic goître?

There seems to be no doubt that between colloid and fibrous goître, the latter is a sequence of the former, as fibrous degeneration is always a terminal stage. Nevertheless we do not know the evolution of this process step by step. The majority of authors compare the process of fibrous degeneration to senile sclerosis of the gland. Bircher speaks of its atrophy as a consequence of inflammation. We are inclined to accept this view, although the pathogenesis of this slow chronic inflammation remains unexplained.

Is colloid goître always preceded by parenchymatous goître? Although the question is of great interest we have no systematic researches in this direction. And does endemic goître always begin as parenchymatous goître?

Some authors answer the latter question in the affirmative. According to Grassi and Munaron (14), who took up the question of insufficient organic iodine in the atmosphere as a cause of goître, the changes in the gland are caused by hyperfunction (parenchymatous hyperplasia). The hyperproduction of colloid substance is considered as a natural consequence; hence the term colloid goître. This hypertrophy is said to be intended to provide for a greater production of colloid substance (in proportion to iodothyron) to make up for the insufficiency of organic iodine in the organism.

Even admitting that endemic goître commences with parenchymatous hyperplasia, this hyperplasia is not found to be the salient point of endemic goître so that it could be distinguished from other thyroid hyperplasias. The same pathologic picture is indeed found in Basedow's disease and in other affections of the thyroid gland. We think that the differential trait between endemic goître and Basedow's disease is that in endemic goître the colloid substance accumulates in the follicles, whereas in Basedow's disease this substance is reduced to an abnormal degree. The most striking characteristic of endemic goître is not epithelial hyperplasia but *retention of the colloid substance*.

Putting aside all hypothesis, does the large quantity of colloid substance in the follicles of goïtrous subjects really indicate glandular hyperfunction?

We know so little about the function of this gland that it is hazardous to draw conclusions on it on the basis of microscopic findings. Nevertheless, clinical and experimental knowledge leads to the belief that hyperfunction of the thyroid is not a characteristic trait of colloid goître. In Basedow's disease, on the contrary, there seems to be a condition of hyperthyroidism, and the colloid substance is almost wanting in the gland. At all events, if the fact admitted today is true that the colloid substance is thrown into the circulation, it would be of interest to learn why this needed colloid substance remains accumulated in the follicles to such an extent that their walls become atrophied from overdistension?

This question can be answered only by systematic researches into goître in man in its various stages of development. Grassi and Munaron have indicated the right direction in which such experiments should be made.

Endemic goître is almost always accompanied by symptoms of more or less marked hypothyroidism; but it is generally admitted that colloid goître is compatible with normal life of the subject. The study of our cretin dog shows that it did not differ functionally from subjects afflicted with colloid goître, such as is found among subjects in endemic countries.

Bircher, 1896, and Langhaus (24) suppose that in cretins parts of the gland are respected; Kocher (21, 22) believed that as long as part of the thyroid body remained intact cretinism was not a necessary sequence. We do not agree with these authors that so complicated a syndrome as cretinism is should depend solely on the alteration of the thyroid gland, although facts force us to admit an intimate relation between the state of the gland and cretinism. Yet the overwhelming pathologic changes in endemic cretins do not always seem to be explainable by the state of the thyroid gland exclusively. In another paper (5) we considered the question of the cause of endemic cretinism and showed that this chronic disease was due to hypothyroidism that may be characterized by periods of remission, according to the greater or lesser demand on the thyroid function (period of life, development, physiologic state, etc.). And if the thyroid gland of the cretin presents relatively important changes, the fact only confirms our theory on endemic cretinism (5, 6); we considered this question at length and since 1904 we ascribe the disease not to thyroid alterations exclusively but also to endemic hypothyroidism of the mother during the nine months of pregnancy with her offspring.



FIG. 1

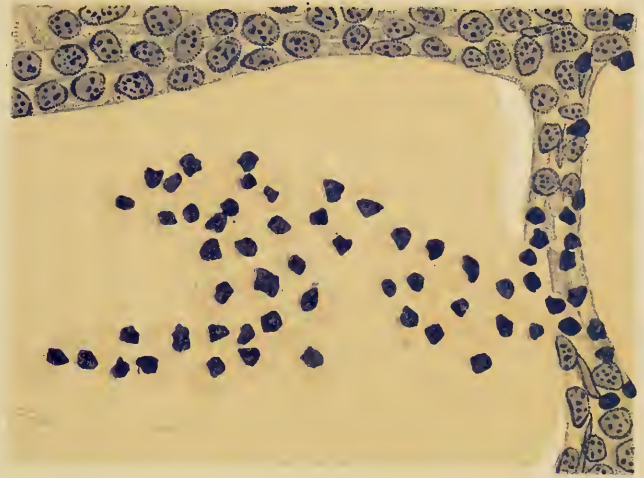


FIG. 2

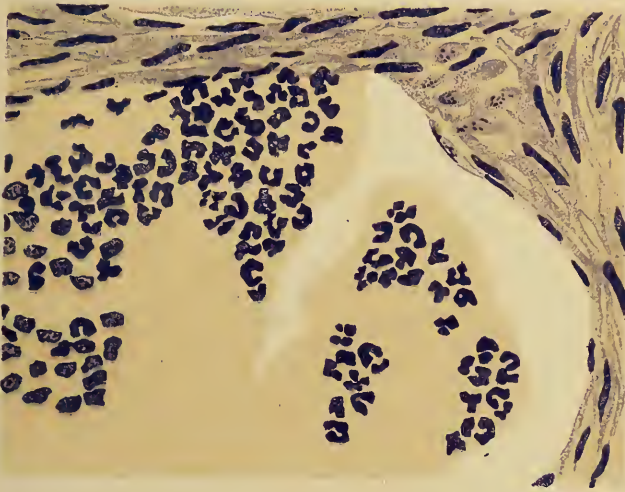


FIG. 3

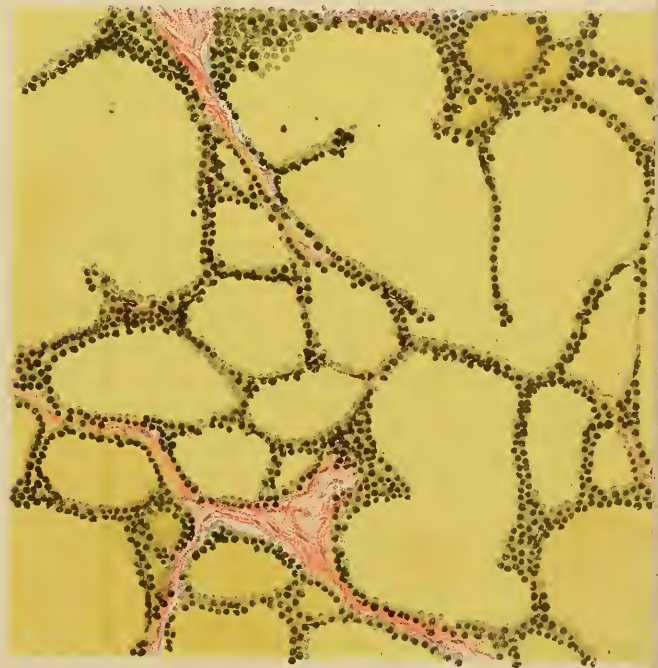


FIG. 4



FIG. 5



FIG. 6

EXPLANATION OF THE FIGURES.

Fig. 1. Thickening of the connective tissue tufts. Alcohol. Hematoxylin-eosin. Seibert. Ocular III., objective II.

In specimens represented in Figs. 1, 2 and 3 the reaction to eosin was almost nil.

Fig. 2. Endofollicular cells with small nuclei. Alcohol. Hematoxylin-eosin. Seibert. Ocular I., objective—homogeneous immersion, 1/12.

Fig. 3. Polynuclear leukocytes and cells with small nuclei in follicles (or lymphatic fissures?) devoid of epithelial lining. Alcohol. Hematoxylin-eosin. Seibert. Ocular I., objective—homogeneous immersion, 1/12.

Fig. 4. Colloid goître—predominant alteration. Formol. Van Gieson-Weigert. Seibert. Ocular III., objective II.

Fig. 5. Endothelial button shaped eminences. Formol. Van Gieson-Weigert. Seibert. Ocular I., objective II.

Fig. 6. Section through the thickest part of the largest button shaped eminence shown in Fig. 5. Seibert. Ocular I., objective—homogeneous immersion, 1/12.

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ROME, January, 1906.

THE GENESIS OF GENIUS.*

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GENERAL CONSIDERATIONS.—Geniuses and distinguished men may be designated as beings born with potential energy of a degree higher than is that of ordinary men. Carlyle's definition of genius,—“the ability to take infinite pains,”—quite corresponds with reality from a scientific point of view. All great men have been noted for so marked a capacity for work and sustained thought that it is customary to wonder how they found it possible to accomplish so much in the short period that constitutes a human lifetime.

Whence comes such potential energy in man?

Has heredity any vital bearing on the birth of genius? If so, how is one to explain the paradox of the coexistence of genius and mediocrity or even of imbecility in the same family and of the same parentage?

I know a large family in which the first-born are of mediocre intelligence, while the youngest is a brilliant child. In another family two of the offspring are of mediocre intelligence, devoid of common accomplishments, while one, the youngest, is gifted in many ways and well known for more than one accomplishment. In another family, that I have known for years, there is the same paradoxical line of demarkation separating moral imbecility of one member of the family from splendid manhood and genius in another. In still another family three of the offspring are famous in the world of science and the arts, while one is an imbecile. One could go on citing instances almost without limit.

* Read by title at the Second Belgian Congress of Neurology and Psychiatrie, held at Brussels, August 29-31, 1906.

We have all exhausted our resources on theories of environment and other determining factors in the genesis of crime and criminality, and we probably all recognize that in reality something more than mere incidentals must be looked for as factors in the shaping of individual psyche. For we know that the environment which inevitably degrades one member of a family may not only allow that member's brother to escape unscathed, but is apt to prove the very basis for the upbuilding of a magnificent manhood in the latter.

When we come across these stumbling blocks in the theory of "environment," we readily add that predisposition together with environment work for the good or for the evil of the respective members of the same family. When dealing with criminality, we readily confound poverty with criminal environment and base our arguments on that "environment" as being synonymous with criminality in the case of the poor.

That the above argument is both correct and incorrect is self evident: 1, it is correct in so far as bad influences favor the development of the bad, who could otherwise pass in the crowd of moral mediocrity; 2, it is incorrect in so far as some subjects, who find themselves in the depths of degradation, draw from those very depths the richest sources of inspiration for all that is healthy and ideal. There is no dearth of types in classic literature illustrating sterling character that rises superior to "environment" of the most degrading nature at certain periods or at specific epochs. In such cases the flash of character is due to a supreme effort of a lifetime,—an effort that to be sustained would require a more potent cellular potentiality than the degraded possess.

It should be borne in mind that what we call "right" is usually done at the expense of privation, sacrifice and general control that requires a great expenditure of energy. In real life it would be difficult *not* to verify what has been typified in fiction.

The world's greatest men, with very few exceptions, were born and bred and often died in poverty. In most instances very dung-hills of immorality and hideousness served—not to degrade,—but to elevate them to the most sublime heights of morality.

However meaning or meaningless the theory of environment may be, we cling to it; it suits our ideas *more or less*, and we love it as an argument, leaving the term *more or less* to take care of itself—so long as we are enabled by it to tide over a difficulty. There are conditions, however, in which the trick contained in the *more or less* kind of reasoning does not lend itself as an argument. Such is the case when honorable parents in favorable and

even ideal circumstances give birth to offspring vastly differing from one another in morality, mentality and capacity. How is one to explain the fact that the same parents, under the same environments, gave birth to three offspring who are famous all the world over, while one is an imbecile? I have a letter from a New England lady who asks me a similar question about a family quite similar to the one just mentioned, saying:

"How can you explain this shocking condition in the family 'X.," when the surroundings were certainly most ideal for all the children, and the heredity was the same. Knowing your views on the workings of alcoholism, I wish to add that the parents of these children never touched liquor."

Another, and more common occurrence, is for a family to have one member a genius while the rest of the offspring are of mediocre mentality. Of this class of families there have been and are as many as there have been and are geniuses, as may be seen by examining biographies chosen hap-hazard,—Michael Angelo; Leonardo Da Vinci—the eldest of eleven children, his father having married four wives in succession after the birth of Da Vinci; Sir Joshua Reynolds—one of seven children; Prud'hon (Pierre)—the thirteenth child; Gainsborough (Thomas)—the youngest son of a large family; Schumann—the youngest of five children; Mozart—the youngest of seven children; Wagner—the third of seven children; Schubert—thirteenth of fourteen children; Benjamin Franklin—youngest of seventeen children; Cooper (James Fenimore)—one of eleven children; Washington Irving—youngest of eleven children; Dickens—second of eight children; George Eliot—fifth and youngest child; Coleridge—youngest of a large family, and Napoleon, the eighth of his family. Many more instances may be cited, showing that great men, who must have had excellent heredity—in the sense that will be explained here—had mediocre, or even worthless, brothers and sisters, whom they often had to support.

What, then, is the significance of heredity in the light of the above conditions? If heredity is excellent enough to produce one genius, why should it be impotent as regards the brothers and sisters of the genius?

The answer to this question will be developed in this paper. Meanwhile, it is of interest to call to mind once more what constitutes genius. As has already been remarked, Carlyle's definition, according to which genius consists of the "ability to take infinite pains" appears correct, and has the great merit of lending itself to verification at all times. Translated into technical language, the sum total that makes up intellect (memory, intelli-

gence, will-power, judgment, etc.) is, according to Dr. L. Lefèvre's definition (1) a function of the central nervous system (p. 186). According to this author, the sum total of that which constitutes intelligence (memory, will-power, judgment, etc.), cannot be transmitted by parents to their offspring, because this sum total is a function, and one does not inherit functions, but organs that preside over them. We no more inherit from our parents this sum total than we inherit from them secretion, respiration or the circulation of the blood. We get from our parents organs,—a cerebrum, kidneys, lungs, a heart, and—"like organ, like function." We inherit not our gait, but limbs (p. 187). The new born infant does not possess any will-power, judgment, intelligence or conscious conception; at that age sensory impressions,—the first sources of ideas, do not yet reach the organ of thought, and the child has neither memory nor centres of realization or exteriorization. It has neither sentiments, affections, nor the senses of responsibility and remorse; the child possesses nothing of intelligence, and lives a life of vegetation (p. 188). Ideas are possible only where there are sensations, as the formation of ideas is always consecutive to sensations. It is finally concluded that parents transmit to their offspring that which exists virtually in the ovum—the various parts of the body and the tendencies inherent to human nature, such as the sense of preservation of self and of the human race. All else that is the result of function is acquired with experience (p. 189).

Dr. Lefèvre's conclusion seems to correspond with existing facts, as will be further demonstrated. It follows, then, that when we speak of genius it should not be presumed that a genius has a higher mentality at birth than his brothers and sisters had or will have, because mentality does not exist at the time of birth. Mentality, being the result of function, and a function not being inheritable, as the above author justly remarks. Genius inherits cellular potentiality as do all his brothers and sisters, but his cellular potentiality is of a higher degree.

Take, for instance, the genesis of idiocy and imbecility. It has been proven by many clinicians that alcoholism, syphilis and various other pathologic factors in the parents are causes of these diseases in the offspring. In my own papers on the subject I have demonstrated that alcoholism of the parents is the major cause of idiocy and imbecility of the offspring. (2). Clinical work proves beyond any doubt that a perfectly healthy parent, if intoxicated with alcohol at the time of conception of his offspring, is apt to cause the birth of an idiotic, imbecilic, epileptic or otherwise degenerate child. It is further worthy of note that the first chil-

dren of inebriate parents are apt to be less degenerate than the last ones—when the parents' cellular potentiality has reached a marked degree of reduction. This fact was particularly exemplified in my paper on the genesis of epilepsy (3).

The mechanism of these workings in chronic alcoholism is quite complex, but need not be considered here beyond the fact that the cellular potentiality of the entire body of the alcoholic progenitors is changed by virtue of the impaired organic function caused by the pathogenic agent—alcohol. In the case of chronic alcoholism, for instance, the brain cells are the first affected physiologically, and individual idiosyncrasies govern the successive pathologic involvements of the other organs in general. In the end, however, every tissue in the body is the sufferer—the brain, the kidneys, the liver, the lungs, the ovaries, the testicles, the circulation, and consequently, the entire body. Under these conditions cellular potentiality is reduced, and a child born of such parents pays the penalties of its progenitors' sins.

In acute cases similar conditions of reduced potentiality exist. Alcoholic intoxication of the parents at the time of conception of the offspring disturbs the physiologic cellular status causing a reduced cellular potentiality of the entire system—including the ovule and the spermatozoid. Hence, a conception resulting during such a state ends in the birth of an offspring with reduced cellular potentiality,—in idiocy, in imbecility, in epilepsy, etc.

Of course, cellular potentiality may be changed by other agents. Psychic conditions may also produce perturbed physiologic function and consequent detrimental nutritive changes. Strong emotions have been known to turn one's hair gray in the course of one night, as was the case with Marie Antoinette. And I know certain subjects who have "spells of gray hair crops" when under unusual mental stress. As soon as the mind is relieved from anxiety, the crop of gray hair is replaced by hair of normal color. That such conditions are due to perturbed physiologic function, bio-chemical changes and reduction of cellular nutrition need not be argued. We know that various conditions of mental status are characterized by various bio-chemical changes. In 1886, Dr. Mary Putnam Jacobi (4) found in a woman suffering from incipient melancholia and mental inactivity the excretion of urea reduced to 14 or 15 grams daily, as against 20, 25, 28, 35 and 38 grams daily in normal women. That such bio-chemical reduction goes hand in hand with lessened cellular potentiality need hardly be argued. The importance of bio-chemistry in relation to psychiatry and cerebration in normal people is being more and more appreciated, and some important work is being done on the

subject by various workers. Thus, dementia precox (whatever significance clinicians may wish to attach to the term) is said to be characterized by a marked decrease of urea and of uric acid as well as by decreased acidity of the urine (5). Whatever findings await us in the future in this new field of work, the progress made in this line of research in relation to psychiatry shows that not only the biochemistry, but also the cytology of the blood changes with the various forms of psychoses. Whether such changes are always caused by microbic agents need not be discussed here. The fact remains that the function of mind is intimately related to the function of body—and to that of the millions and billions of its various constituent cellular elements. Pleasure, pain, joy, grief, mental exhilaration or depression,—all have their respective and characteristic physiologic, pathologic, bio-chemical and even cytologic effects. From a physiologic point of view these occurrences are quite natural, as emotion of whatever kind feeds on energy, and expenditure of energy must necessarily be based on certain combustions, involving either reduction or destruction of certain cellular elements. Hence, it is not to be wondered at that strong emotions of an extraordinarily sad character should turn the hair of a young person gray in the course of one night, or that strong emotions of a pleasurable character should change one's usual sluggish cellular potentiality into one of higher degree.

EFFECT OF CELLULAR POTENTIALITY OF THE PARENTS ON THE QUALITY OF THEIR OFFSPRING.—Psychiatric research has fully brought to light the relation existing between the status of the parents at the time of conception of their offspring and the mentality of the latter. A good part of this subject is treated of in my two papers already quoted. Similar study in relation to so called normal people is still in its infancy, but analysis shows that a similar correlation also exists in the latter case. Thus, I know a family in which moral imbecility of the offspring is directly traceable to marked anxiety and worry of the mother on the night of marital relations that resulted in the conception, of which the moral imbecile in question was the issue. The mother says that she did not wish to marry, but was forced to do so by her parents. She wept as she was being led to the altar. She says that her eyes, nose and face were red and swollen from weeping. The offspring in question was born nine months after the marriage. He is a "moral imbecile," from a technical point of view, although he has a certain position in the world in which he moves; he has congenital anosmia—having never known the sense of smell. All the other children are normal and moral.

There can be no doubt that the violent emotion experienced by the mother at the time of conception of her first offspring was directly responsible for the character of that offspring: the emotion and grief caused perturbation of the metabolic process and such a deep change of the cellular potentiality of the mother that a pathologic offspring was the result of the union.

An extraneous poison, such as alcohol, morphine, cocaine, etc., taken in excess at such a time, could not have had a more potent influence.

The proof that the above mentioned correlation between cause and effect was a reality is almost demonstrable in the same family. Thus, the mother is a woman of high morality of the Puritan type; she is intelligent, tenacious and possesses a goodly share of practical common sense. Armed with these qualities, she lost no time in reconciling herself to her marriage, with the result that she became convinced of the girlish folly of her hostile attitude towards the man who proved to be a devoted husband. In a stormy struggle with the stern realities of life that overtook them both, she became a devoted wife and companion to her husband. He showed himself worthy of her friendship as an honorable husband and good father. Before the youngest child was conceived, business compelled him to absent himself. During that time the wife had continued proof of his sincerity, honor and devotion. She was a happy wife when he finally returned. The youngest child was born nine months after that return. The child early showed remarkable gifts. He was precocious, early became an omnivorous reader, wrote poetry when seven years old, was a leader of his companions and dreamt childish dreams of supremacy and grandeur. Supremacy and grandeur he attained—not in a childish way, but as a distinguished man—at an early age. His achievements are known wherever civilization is known.

It cannot be denied that in view of the facts exposed, touching on the correlation of cause and effect in the genesis of human psyche, it would be wrong to deny such a correlation as was presented here.

HIGH CELLULAR POTENTIALITY IS THE HERITAGE OF GREAT MEN.—Such superior capacity for mental work, as this youngest offspring exhibited is common to all great men. And almost all such men are given life when their parents present the highest degree of cellular potentiality.

In all ages genius has been characterized by an enormous capacity for work and potential mental energy. This energy is marked even when physical strength is below par, as was the

case with Demosthenes, Voltaire, Heine, Daniel Webster, Alexander Pope, and many others.

GENIUSES AND THE AGES OF THEIR PROGENITORS.—How is one to explain the fact that the same parents can hand down to their different offspring different degrees of cellular potentiality? The question is most complex, as may be judged from the facts already adduced. Many and varied factors preside over the hereditary transmission of potential energy: they are physical, mental, physiologic, pathologic, bio-chemical, etc., etc. Under these conditions no fixed formula may be given without committing some grave error. Nevertheless, a glance at the biographies of great men shows one conspicuous feature as a factor in their birth—their parents are, as a rule, not young.

An examination of a number of biographies shows that:

1. The majority of great men were *not* the issues of youthful parents, and a very small minority only were first offspring.
2. The majority of great men were born when their parents were nearer thirty years of age and above, than twenty or below.
3. The majority of great men were the *youngest* offspring, and in some instances even the youngest offspring of the youngest offspring, while only a small minority were firstlings.
4. In other words, parents who have reached the age of mature cellular potentiality are most apt to give birth to great men and geniuses.
5. Youthful parents seldom give birth to gifted children because such parents have undeveloped systems with potential energy that is below par.

Prof. A. Marro concludes, from his research into criminality in relation to the age of parents, that the frames and organs of youthful parents are still draining the circulation for growth, and individual cellular vigor is still below par. Children born of such parents are apt to be degenerates. Similar results are observed among the lower animals, the offspring being cachectic and rapidly succumbing to the effects of the slightest ailments (6), p. 276.

The reader is also referred to my paper entitled "The Genesis of Sex" (7), in which the subject of the parents' age in relation to the potential energy of the offspring is considered at length, the subject practically being an introductory chapter to this paper. The facts brought out in that paper, together with those here treated, explain the apparently mysterious instances of the birth of geniuses and mediocrities in the same families.

THE MAJORITY OF GENIUSES AND GREAT MEN WERE THE OFFSPRING OF PARENTS MATURE IN AGE AND DEVELOPMENT.—In my

paper dealing with the genesis of sex, particular stress is laid on the variation of potential energy of the mother, and it is demonstrated indirectly that high mentality of nations goes hand in hand with high cellular potentiality of parents. It is also demonstrated that such high parental cellular potentiality is possible only when mature age is reached, such as from 30 to 35 years for man, and 25 to 30 years for woman. The principle of procreation at the age of maturity in relation to high civilization applies equally to the genesis of genius: the higher the potential energy of the parents at the time of conception of the offspring the more chance is there for that offspring to become a genius.

Both the father's and mother's potential energy play important rôles in the heritage of the offspring. This fact is amply demonstrated in every day life as well as in psychiatric work.

While considerable importance is ascribed here to parental potentiality, it may be well to bear in mind that age alone—as an index to potential energy of parents—should not be taken as an absolute criterion in all cases. Thus, one or both parents may happen to be in better or in worse condition irrespective of age, accordingly transmitting to their offspring a high or low potentiality. In a contemporary Imperial family, for instance, one of the younger children is an imbecile, and an illegitimate child, born of the same Imperial father and in the same year as the imbecile prince, was deformed in exactly the same manner as the Imperial progenitor. The eldest and other children of this monarch are in good physical condition (I omit citing the source of this information for obvious reasons).

Thus it is evident that a sheer statement of the fact that a child was a first or a last born means nothing in itself, as a first born may come into the world when the parents are at the age of mature development. It is more important, therefore, to know the age of the parents when a given child was born than it is to know whether the child was a first or youngest child. This information should, of course, be considered in connection with a normal physical and mental status of the parents, otherwise the results change.

Another point of interest in the study of the genesis of genius is where the child is born outside of wedlock. This question is too complex for consideration here, as it would require a lengthy analysis in itself. Take, for instance, the case of Leonardo Da Vinci, who was the oldest of eleven children, his father having married four wives in succession after the birth of Da Vinci, the illegitimate child. His father was twenty-five years old when the great painter was born, but I have not been able to discover the

age of the mother at that time. All that is known of her is that five years after the birth of this son she married a man "in her own station of life." There is little to be said about the gifts of men born outside of wedlock, beyond stating that the adverse circumstances accompanying such births and following such children throughout life are the most powerful agents in whipping up their potential energy to a maximum degree. Such must have been the case with all the great men who gave laws and made religions for the world, most of those men having been born outside of wedlock. One might justly say that having been deprived of the rights and privileges of manhood they sought compensation by claiming the attributes of godhood. Thus genius, flowering on a dunghill produces flowers of exquisite hue. Two points of interest suggest themselves in connection with the greatness of illegitimate children: 1,—considering the fact that adverse circumstances do develop one's energies, it is probable that millions of children born within the bonds of wedlock would also develop into men of note—if they had any incentive to do so; 2,—the commercialism underlying marriages in all countries may possibly have an influence on the birth of a considerable number of mediocre children within the bonds of wedlock. While this subject is of considerable interest, it is not necessary to develop it here.

Another point of interest in the study of biographies of great men is the profligacy of some of the parents (Beethoven's father, Byron's father, etc.). In such cases we find that the great offspring came into the world while their profligate, alcoholic progenitors were still young and had not yet had time to degenerate sufficiently to permanently affect their great offspring. In many instances of this kind the children born later died in infancy or were degenerates. In my paper on the genesis of epilepsy I brought to light this particular point in relation to the survival of the first born of alcoholic progenitors. The relation of cellular potentiality to parental age is reversed in such cases—if a large number of children are born of such parents.

From the arguments developed here it may be stated that in analogy to what is said of opportunity—that knocks at the door of every man once in a lifetime, it may also be said of genius: *there is a period in the lives of parents when their cellular potentiality is at its height, and the offspring conceived at such a period, is fortunate indeed.* Armed with the precious heritage of high cellular potentiality, such an offspring sees and conquers or conquers what he sees—not by reason of any mysterious force, but by virtue of his capacity for work, his splendid source of

energy and ability for sustained application that his brothers and sisters may envy but may not imitate. It is this energy that enables the future great men to be omnivorous readers and incessant workers even during childhood and at a tender age to become familiar with more books and subjects than is the lot of brothers and sisters twice their age. Life is too short for them, and they "can almost hear the days walk away as the heart beats on," as a gifted and successful young man said to me. "Yesterday is not today, and there are only a given number of days in which one may live and work," the same worker added.

Similar reasoning expressive of pulsating energy is characteristic of all great workers. Michael Angelo, Titian, Raphael, Leonardo DaVinci, Shakespeare, Goethe, Beethoven, Voltaire, Dickens, Dumas and many other men of their stamp lived and worked three, four, five and even ten times their lives. According to Marro, Leibnitz often spent three consecutive days and nights in his arm chair—at work while trying to solve some problem. Ticho Brahe made himself a prisoner for almost 21 years, working incessantly in his observatory until his system became undermined. The famous astronomer, the abbot De la Caille, constructed for himself a headrest that enabled him to sit up nights and cheat himself out of sleep that he considered his worst enemy. The excessive and sustained work of Goethe cost him a "break down" after the conclusion of each of his works. The strenuous lives of our contemporaries are within the reach of our own observation, and Thomas Edison speaks for more workers than himself when he says that sleep is our worst enemy. His exuberant energy, disregard of sleep and contempt for overfeeding are well known to the world.

Such is genius: the result of exuberant spirit feeding on excessive work and sustained thought.

What a contrast this condition of potentiality is to that found in mediocre persons. Those who have to handle crowds at large are familiar with the dread of work, thought, initiative and expenditure of brain force that characterizes mediocrity. How often does not mediocrity exasperate by its shirking, shrinking and wriggling—while trying to cheat itself out of its own time—its lifetime? At first sight one is apt to misjudge such an attitude, branding the subject as a lazy or unwilling individual. But the fact should be recognized that the majority of such people, who constitute mediocrity, are simply incapable of sustained attention and work—such as characterizes great men. While the latter are developing, and learning, and analyzing, and synthetizing, and creating,—mediocrity remains largely with infantile, undeveloped

mentally. Dr. Lefèvre justly crystallizes his conception of the sum total of human mentality when he says that mentality is a function and cannot be inherited.

From the facts adduced here it is difficult to conceive of the possibility of the birth of gifted offspring from parents who are not in harmony with themselves; the physiology and psychology of our systems depend so much on the state of our minds. Professor Mosso's experiments on the variation of vascular tonus and blood pressure according to one's psychic status are concrete enough, showing that a person's nutrition (circulation of the blood) is not the same when he is depressed as when he is in a happy mood. One may hardly, therefore, accept the opinion recently uttered by a famous lecturer and teacher in New-York, to the effect that "happiness is not essential to make marriage a success," and that the main object of matrimony should be procreation in order to "keep the flame of human life burning" (8). From the standpoint of the scientific principle underlying the genesis of genius and great men, the notion of keeping the flame of life burning by procreation is absolutely valueless. If the "flame of life" is meant as an equivalent of numbers of human beings, such an opinion may be valid. But if it is meant to produce men of worth—that opinion loses all value in the light of the arguments adduced here. The conception of great men within wedlock based on hatred is inconceivable—as has been indirectly brought out in this paper. Besides, marriages in imperial and royal families—intended pre-eminently for procreation—at all cost, have amply demonstrated the fallacy of force and calculation when applied to human procreation.

An exposition of a few biographies appended here and taken at random for the purpose of this study fully support the facts presented regarding the genesis of genius.

It may be well to remark that if any inaccuracy occurs below as regards the primogeniture either of the great men or of their brothers or sisters, it is simply because it is difficult, and in some cases impossible, to ascertain the exact facts in biographies. A thorough search in biographies written by different authors often completes the data given in one biography as regards the primogeniture. Unfortunately, circumstances beyond my control make it difficult for me to undertake so extensive a work, and I must content myself with the study of a limited number of biographies of every man mentioned. Great men, whose biographies consulted by me do not contain the desired item, are not considered in this paper.

I wish to add also that possibly even the works quoted here

contain more information than I cite. The reason for such incompleteness is also lack of time, preventing my thoroughly analyzing the sources consulted. It should be borne in mind, however, that while this study of the biographies is incomplete, it under-rates, rather than over-rates the facts relating to genealogy in families of great men. Thus, for instance, according to some biographies, George Washington was the first born, but a further study shows that he was the first born of his mother, who was a widow when she married Washington's father, the latter having had four children with his first wife. Under such conditions the claim made here in regard to mature age of progenitors at the time of birth of their distinguished offspring is correct, and the fact would not appear if only one biography had been consulted. In the case of Washington Irving a similar mistake is possible—if one were to be guided by the author's sketch, according to which it may only be inferred that he had an elder sister, but according to Charles Dudley Warner's biography of Irving, the latter was the eleventh child, consequently born when his parents were quite mature.

From these and similar facts it is evident that this study loses rather than gains by the superficial examination of biographies used here as documentary evidence.

Reluctantly I gave up the study of biographies of the majority of French and German men of note, as the information sought was conspicuous by its absence in those works which I examined.

BIOGRAPHIC DATA CHOSEN AT RANDOM, SHOWING THAT THE MAJORITY OF GREAT MEN WERE BORN WHEN THEIR PARENTS WERE OF MATURE AGE. THAT THE MAJORITY OF GREAT MEN ARE THE YOUNGEST BORN OR YOUNGER CHILDREN, WHILE THEY ARE ONLY OCCASIONALLY FIRST BORN.

1. VAMBÉRY, ARMENIUS.—Had an elder sister. Mother was 18 years old when she married his father. She had a strong character and worshipped her husband for his scholarly accomplishments. She was widowed when 22 years of age. Had five children by a second marriage, none of whom achieved distinction. Her second husband was a worthless man (*The Story of My Struggles, The Memoirs of Armenius Vambéry*).

2. GIBBON.—Eldest of seven children; his five brothers and only sister died in early infancy (James C. Morison).

3. POPE, ALEXANDER.—He was not an only child, for he had a half-sister, by his father's side, who must have been considerably older than himself, as her mother died nine years before the poet's birth. He was the only child of his mother (Leslie Stephen).

4. MILTON.—First born (Mark Pattison).

5. COLERIDGE.—Youngest child of a large family. By his first wife his father had three children. By his second wife—ten children: of these latter one son died in infancy, four others, together with the only daughter of the family, passed away before Coleridge attained his majority (H. D. Trail).

6. GRAY, THOMAS.—The English poet, was the only surviving child of twelve children. The rest died in infancy from "suffocation produced by a fullness of blood." In order of birth Gray was the fifth child (The Poetical Works. Edited by Rev. John Milford). Gray's father was thirty years old when he married Gray's mother, who was twenty years old (Edmund W. Goose).

7. STERNE, LAWRENCE.—Was of the first two children; a large number of children born afterward, all dying in infancy. Sterne's father was the seventh and youngest born. Mother was a widow when she married Sterne's father. A family "continually increasing by birth, only to be again reduced by death." Sterne said: "My father's children were not made to last long" (H. D. Trail).

8. COOPER, JAMES FENIMORE.—Eleventh of twelve children (Thomas Lounsbury).

9. TAYLOR, BAYARD.—Fourth child; the other three died in infancy; he was first to outlive infancy (Albert H. Smyth).

10. POE, EDGAR ALLAN.—Second of three children. The other two were girls (G. E. Woodberry).

11. EMERSON, RALPH WALDO.—Second of five children (Oliver Wendel Holmes).

12. IRVING, WASHINGTON.—Youngest of eleven children, three of whom died in infancy. He was the eighth son (Charles Dudley Warner).

13. ARAGO, FRANCOIS.—Oldest of a large number of children (Les Contemporains. Eugène de Mirecourt).

14. BALZAC.—Youngest of three children. Two elder sisters (*Ibid.*).

15. HEINE.—First child of four. A sister, Charlotte, and two brothers, Gustav and Maximilian. Mother a superior woman and highly educated; she spoke Hebrew, French, English and German with equal fluency. She was poetically inclined and a thinker, as may be judged from her letters written when she was twenty-four years of age—at the time she became engaged to be married to Heine's father. Heine's father was of striking physical beauty. The mother had a powerful influence on the education of her children (Heine's Werke).

16. ELIOT, GEORGE.—Youngest. Her father's fifth and her

mother's third and youngest child. Her mother was a superior woman (Leslie Stephen).

17. WHITTIER, JOHN GREENLEAF.—If the order in which the names of the four children are given is correct, he was the second of the four (Mary, John Greenleaf Whittier, Matthew Franklin and Elizabeth). His father was the youngest son of eleven children. He married when forty-four years of age. Mother was twenty-three years old at the time of her marriage (Carpenter).

18. BRYANT, WILLIAM CULLEN.—Second of seven children (Bigelow).

19. HAWTHORN, NATHANIEL.—Second child; only son; two sisters. Elizabeth was 4 years older and Louise 2 years younger (Woodberry).

20. DICKENS.—Second; eldest son of eight children (A. W. Ward).

21. ADDISON, JOSEPH.—Eldest son of six children. Father was a literary man (W. J. Courthope).

22. SOUTHEY.—Second child. Mother was a youngest child (Ed. Dowden).

23. BYRON.—Youngest child of three. His father had two children with a first wife. Only son by the second marriage. Father was a profligate (John Nichol).

24. SWIFT.—Younger (posthumous) child of two. Elder a girl (Leslie Stephen).

25. TOLSTOI.—Youngest of four boys; there was a youngest sister. "We were five children, Nicholas, Sergius, Dmitri, myself—the youngest boy, and our youngest sister, Mashenka, whose birth cost my mother her life." His mother was "no longer quite young" when she married his father. His mother was "very well educated: besides the Russian language, which she, contrary to the majority of her equals, wrote fluently, she could speak four foreign languages: French, German, English and Italian, and she was very fond of art. She played the piano, and her friends have told me that she was a mistress in telling stories" (Extracts from "*Leaves from My Autobiography*").

26. ALFIERI.—Fifth child of his mother. She had 3 children when she married the poet's father, and he was fifty-five years old at that time. Two children were born of this second union—a daughter, and two years later—a son, the poet. Alfieri's sister became a nun. The mother married a third time (Frank Horridge).

27. GALILEO.—No definite information, except that there were sisters and a younger brother, who was a "good-for-nothing." The father was a man of erudition, a musician of merit, taught

his son the organ, the lute and other instruments and the theory of music. He was clever as a writer, possessed much independence of opinion and had a healthy distrust of dogmatic authority (Frank Horridge).

28. MACHIAVELLI.—An elder brother, Titto; sisters: Primerana and Genevra. Father studious man. Mother composed verses and hymns to the Virgin (Frank Horridge).

29. CAVOUR.—Younger of two sons (Frank Horridge).

30. WASHINGTON.—Fifth child of his father and first of his mother (Washington Irving).

31. JEFFERSON, THOMAS.—Third child of ten. It is not generally known that he was an excellent violinist (E. S. Ellis).

32. HENRY, PATRICK.—Second son and one of nine children. This account does not give any information as to whether he was the last born or not. His mother was a widow when she married his father. Patrick Henry was born of this union. His mother possessed undeviating probity, correct understanding and easy elocution (William Wirts. Mrs. Syme).

33. LINCOLN.—Second son. No mention is made of any more children (R. D. Sheppard).

34. CLAY, HENRY.—Seventh and youngest living child of a family of eight (Howard W. Caldwell).

35. WEBSTER, DANIEL.—Seventh and youngest child. There were five children by a first wife and four by a second. "It is thought that he inherited his gifts from his grandmother, who had a striking figure, powerful mentality and commanded the admiration of her friends (Elizabeth A. Reid).

36. OTIS, JAMES.—He had an oldest sister, but he was an eldest son. There were thirteen children in the family (John C. Ridpath).

37. ADAMS, JOHN.—Eldest child (Samuel Willard).

38. RANDOLPH, JOHN.—Third son. His father was a fourth son (R. H. Dabney).

39. FRANKLIN, BENJAMIN.—The youngest of seventeen children, by two wives. He was the youngest son of the youngest son for many generations (Frank Strong).

40. DEWEY, GEORGE.—The third son in succession. The eldest son, Charles, was the senior of George by eleven years. The fourth child was a daughter, Mary P. A distinguished family for many generations back (The Life and Achievements of Admiral Dewey. Murat Halstead).

41. CATO THE YOUNGER.—He had a half-sister, Servilia, by the mother's side, a brother, Caepio, and a sister, Porcia (*Plutarch's Lives of Illustrious Men*, by John Dryden and others).

42. NAPOLEON.—Eighth and youngest (?) child of his mother (*Histoire de Napoléon*, Elias Regnault, t. I., pp. 2-3).

ARTISTS.

43. MICHAEL ANGELO.—Second son. First born was Leonardo. His father was thirty-one and his mother nineteen years old when Michael Angelo was born. He seems to have had several brothers (Sarah Bolton).

44. TITIAN.—Youngest of four children: Caterina, Francesco, Orsa and Titian. Little is known about the mother. The father was a brave soldier and later an inspector of mines, esteemed for his wisdom and uprightness (Sarah Bolton).

45. RAPHAEL.—The only surviving child of four. The other three children died in infancy. His mother was a woman of unusual sweetness of disposition and beauty of character. Raphael was eight years old when she died. His father was a painter of considerable merit and had poetic ability; he wrote an epic of 224 pages in honor of the duke of Urbino. Raphael was eleven years old when his father died (Sarah Bolton).

46. DA VINCI, LEONARDO.—Illegitimate son of his father, who was twenty-five years old when Da Vinci was born. His father must have been a man of considerable character, as he brought the illegitimate child to his bride, whom he married a few months after the birth of this son. The young wife is said to have tenderly cared for the adopted child. According to Sarah Bolton, twelve other children were born to Da Vinci's father by four wives in succession; according to R. M. James, only eleven more children were so born.

47. REMBRANDT.—Youngest of six children: Adrian who became a miller, Gerrit, Machteld, Cornelius, Willem, who became a baker. His father was forty, and his mother thirty-five years old when Rembrandt was born. His mother had a strong character (Sarah Bolton).

48. RUBENS.—Youngest surviving son of seven children. His father was a learned Doctor of Laws, having taken his degree in Rome when he was thirty-one years old. At that age he married Rubens' mother, who was a woman of unusual force of character (Sarah Bolton).

49. MURILLO.—An only son. There was a little sister, but it is not stated whether she was or was not younger. His father was a mechanic (Sarah Bolton).

50. WOUWERMAN, PHILIPS.—First son, but it is not stated whether he was a first child. His father was a painter of note (Ralph N. James).

51. VAN DE VELDE, ADRIAN.—Youngest of the "Elder Willem" (*Ibid.*).

52. VAN DE VELDE (DE YOUNGE).—Had an elder brother (see 51), whose youngest son was also a celebrated painter.

53. WILKIE, SIR DAVID.—Third son of his father's third wife (*Ibid.*).

54. PRUD'HON or PRUD'HOMME (PIERRE).—Thirteenth child of a mason (*Ibid.*).

55. REYNOLDS, JOSHUA.—Seventh child (*Ibid.*).

56. GAINSBOROUGH, THOMAS.—Youngest son of a clothier. Mother was an accomplished flower painter and encouraged her son in drawing (*Ibid.*).

57. HOLBEIN (THE YOUNGER).—The younger son of his father (*Ibid.*).

58.—VAN DYCK, ANTOINE.—Born by a second marriage of one of his parents. His mother taught him to draw and his father was quite an artist, although he became a merchant (*Ibid.*).

59. LANDSEER, SIR EDWIN.—Fifth child in a family of seven. His father was a skilful engraver and an author of some books on the art of engraving. His mother was a gifted woman (Sarah Bolton).

MUSICIANS.

60. WEBER, CARL MARIA.—Ninth child of his father and first of his mother. His father was fifty and his mother sixteen when the composer was born. Father was a traveling musician and his mother had a fine singing voice (Th. Thomas and Karl Klauser. Also Sarah Bolton).

61. MEYERBEER.—Youngest of three brothers. One brother was a poet, but died too young to give the world anything. Another brother was a celebrated astronomer. A gifted family, cultivated parents (Chapin).

62. MENDELSSOHN.—Second of four children: Fanny, Felix, Rebecca and Paul. A distinguished family. His grandfather is called the modern Plato (*Ibid.*).

63. WAGNER.—The younger among seven children, but exact order of birth is not given. There was an elder brother Albert, and a sister Rosalie (*Ibid.*).

64. BACH, JOHANN SEBASTIAN.—He had an elder brother, Johann Jacob, who was prepared to take his father's place as organist when Bach was doubly orphaned at the age of ten (Th. Thomas and Karl Klauser).

65. MOZART.—Youngest of seven children. His father, the youngest of four children, was the author of "Violin School," an

accomplished musician. Mozart's mother was young when she married his father. Four of her seven children died in infancy (*Ibid.*)

According to Elson, five of the seven children died. The composer's sister, Maria, five years older than her brother, was also an accomplished musician. Mozart had a peculiarly shaped oral passage, much smaller than in ordinary children, and the sound of a trumpet "would send him into spasms of terror."

66. BEETHOVEN.—Second son. The elder brother lived only six days, and his two younger brothers lived to exercise a marked but not favorable influence on the composer's fortune and happiness. These two brothers and three other children born after the composer, seem to have been the degenerate product of their alcoholic father. The composer was born in 1770. His brothers who survived him were born in 1774 (Casper Anton) and in 1776 (Nokolaus Johann). Those born later did not survive (August lived two years; Anna four days, and Maria Margaretha about a year). The father was a tenor. He was a dissipated man and a profligate (*Ibid.* and Sarah Tyler).

A more typical illustration of the systematic working of alcoholism it is difficult to find.

67. SCHUBERT, FRANZ PETER.—Thirteenth of fourteen children. His father played the violin. Five more children were born by a second wife (Th. Thomas and Karl Klauser). According to Sarah Tyler, the composer was the second son, and his father had eighteen sons and daughters, most of whom died in infancy and childhood. A remarkably musical family.

68. SCHUMANN.—Youngest of five children (*Ibid.*).

69. BRAHMS, JOHANNES.—Eldest of three children. Father a remarkable musician (*Ibid.*).

70. GOUNOD.—Father was "getting on in years" when composer was born. Mother was a woman of fine qualities (*Ibid.*).

71. CHOPIN.—Father was thirty-nine years old when composer was born—in 1809. His father was born in 1770 and married in 1806. Four children were born, three daughters and the composer, but order of the births is not stated (*Ibid.*).

72. RUBINSTEIN, ANTON.—Eldest boy. The other children were not gifted. The mother was a musician and taught her first-born music (*Ibid.*).

73. HAENDEL.—Youngest child. Father, who was a physician, was sixty-three years old when composer was born. The mother was his father's second wife and in the prime of life when she married the composer's father. Haendel was a glutton, a caricature of his day representing him with the head of a hog, seated

at the organ, while the instrument is garnished with hams, sausages and other coarse foods. When blindness came upon him he bore it with exemplary fortitude, although the musical picture which he had composed, of Samson's blindness ("Total Eclipse"), caused him to weep (Sarah Tyler and Elson).

74. YSAYE.—An elder brother was destined by the father to inherit the musical career of the family. A pathetic, but interesting story reveals the primogeniture of the master's brother.

"A violin solo had been assigned to me, and I played it, unconscious of the fact that in putting my whole soul into the instrument, I was really wrecking my brother's musical career. It is a singular story, but after the concert, my brother came to me and said: 'I shall never play again.' My father was there, and asked: 'What do you mean?' My brother replied: 'I thought, until I heard this boy play, that I knew something of the violin, but I know nothing. I can never play again.' From that day he absolutely abandoned his musical career. He told me he felt there was no use in his playing. He had had so many years at the instrument, working night and day, while its mastery had been reserved for me" (*The New York World*, Nov. 6, 1904).

As may be seen from the details of the biographies of the 74 great men given above, 10 only are specified as first born. Taking these biographies in separate groups as they have accidentally been classed in this paper, we find 6 first born of the 42 distinguished poets, writers, historians, statesmen, scientists, etc. (Gibbon, Milton, Arago, Heine, Addison, John Adams); 1 artist (Leonardo Da Vinci) out of 17, and two musicians (Brahms and Anton Rubinstein) out of 15.

It is difficult to trace the ages of the parents when these ten first born came into the world. We know that Leonardo Da Vinci's father was 25 years old when his illustrious son came into the world, but we know nothing of the age of his mother at the time of his birth. A thorough search into the biographies of these first born may be fruitful in the matter of establishing the ages of their respective parents; but the point I have tried to emphasize—the mature ages of parents when they give birth to gifted offspring, is amply demonstrated by the overwhelming majority of 64 other than first born to 10 first born men of note—out of 74 great men chosen at random.

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